EXHIBIT B

US007020845B1

(12) **United States Patent**
Gottfurcht et al.

(10) **Patent No.: US 7,020,845 B1**
(45) **Date of Patent: Mar. 28, 2006**

(54) **NAVIGATING INTERNET CONTENT ON A TELEVISION USING A SIMPLIFIED INTERFACE AND A REMOTE CONTROL**

(76) Inventors: **Elliot A. Gottfurcht**, 1018 Hartzell, Pacific Palisades, CA (US) 90272; **Grant E. Gottfurcht**, 1018 Monument, Pacific Palisades, CA (US) 90272; **Albert-Michel C. Long**, 5 Cannes, Irvine, CA (US) 92614

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 722 days.

(21) Appl. No.: **09/518,015**

(22) Filed: **Mar. 3, 2000**

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/440,214, filed on Nov. 15, 1999, now Pat. No. 6,600,497.

(51) **Int. Cl.**
G06F 9/00 (2006.01)

(52) **U.S. Cl.** **715/853**; 715/748; 715/762; 715/810; 715/811

(58) **Field of Classification Search** 345/659, 345/655, 661, 676, 705, 742, 748, 760, 761, 345/762, 763, 810, 811; 707/501.1, 515; 715/513, 515, 501.1
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,706,121	A	11/1987	Young	
5,479,268	A	12/1995	Young et al.	
5,758,126	A	5/1998	Daniels et al.	
5,801,702	A	9/1998	Dolan et al.	
5,809,204	A	9/1998	Young et al.	
5,896,133	A	4/1999	Lynch et al.	
5,911,145	A *	6/1999	Arora et al.	345/853
5,956,681	A	9/1999	Yamakita	
5,958,012	A	9/1999	Battat et al.	
6,028,600	A	2/2000	Rosin et al.	
6,072,483	A	6/2000	Rosin et al.	
6,078,866	A	6/2000	Buck et al.	
6,154,205	A	11/2000	Carroll et al.	
6,199,098	B1 *	3/2001	Jones et al.	709/203
6,226,642	B1	5/2001	Beranek et al.	
6,260,192	B1	7/2001	Rosin et al.	
6,269,361	B1	7/2001	Davis et al.	
6,295,057	B1	9/2001	Rosin et al.	
6,345,279	B1 *	2/2002	Li et al.	707/104.1

(Continued)

FOREIGN PATENT DOCUMENTS

WO	WO 01/75678	* 10/2001

OTHER PUBLICATIONS

Charles Heinemann, "Going from HTML to XML", Microsoft Corporation, Nov. 5, 1998.*

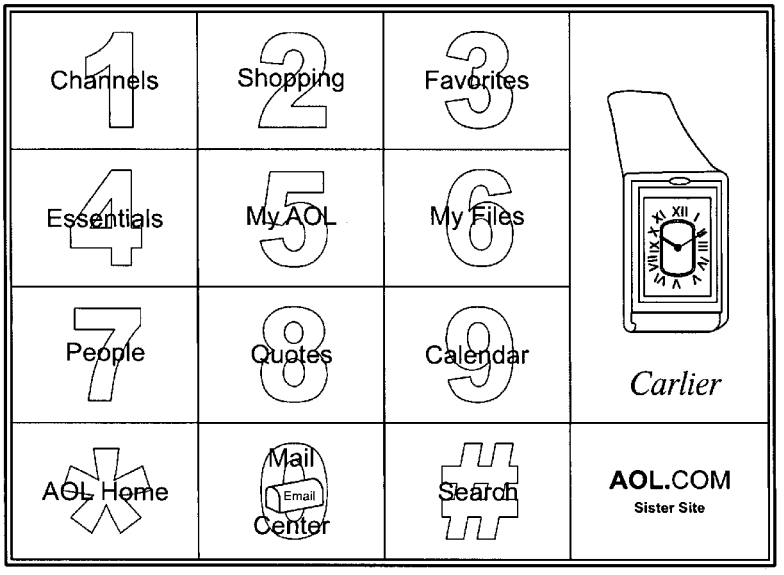
(Continued)

Primary Examiner—Kristine Kincaid
Assistant Examiner—Peng Ke
(74) *Attorney, Agent, or Firm*—Morrison & Foerster LLP

(57) **ABSTRACT**

A method and apparatus of simplified navigation. A web page is provided having a link to a sister site. The sister site facilitates simplified navigation. Pages from the sister site are served responsive to actuation of the sister site link. In one embodiment, the sister site includes matrix pages to permit matrix navigation.

36 Claims, 28 Drawing Sheets



U.S. PATENT DOCUMENTS

6,388,714	B1 *	5/2002	Schein et al.	348/563
6,397,387	B1	5/2002	Rosin et al.	
6,401,132	B1 *	6/2002	Bellwood et al.	709/246
6,411,307	B1	6/2002	Rosin et al.	
6,417,873	B1 *	7/2002	Fletcher et al.	345/853
6,418,441	B1 *	7/2002	Call	707/10
6,438,540	B1 *	8/2002	Nasr et al.	707/3
6,460,181	B1 *	10/2002	Donnelly	725/50
6,476,825	B1 *	11/2002	Croy et al.	345/716
6,532,312	B1 *	3/2003	Corkran	382/284
6,535,888	B1	3/2003	Vijayan et al.	

OTHER PUBLICATIONS

Chieko Asakawa, "User Interface of a Home Page Reader," Apr. 15, 1998, 8 pages, ASSETS '98, Marina del Rey, California.

Susan Decker, "Google Seeks to Invalidate Rival Overture's Web Search Patent", www.detnews.com, Jun. 20, 2002.

Stephanie Olsen and Gwendolyn Mariano, "Overture Sues Google Over Search Patent", www.news.com, Apr. 5, 2002.

Danny Sullivan, "Overture Files Patent Lawsuit Against Google", searchenginewatch.com, May 6, 2002.

* cited by examiner

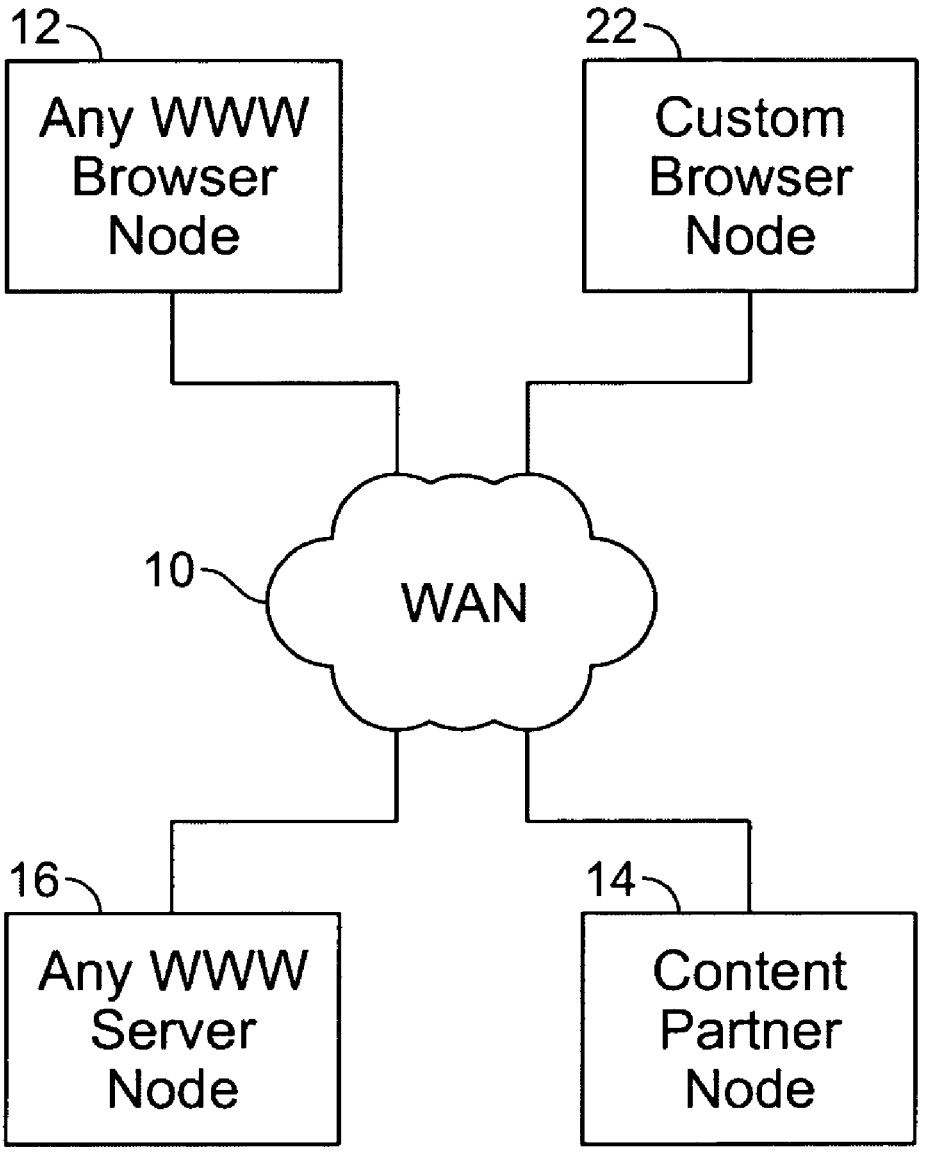

12
Any WWW Browser Node
22
Custom Browser Node
10
WAN
16
Any WWW Server Node
14
Content Partner Node

FIG. 1

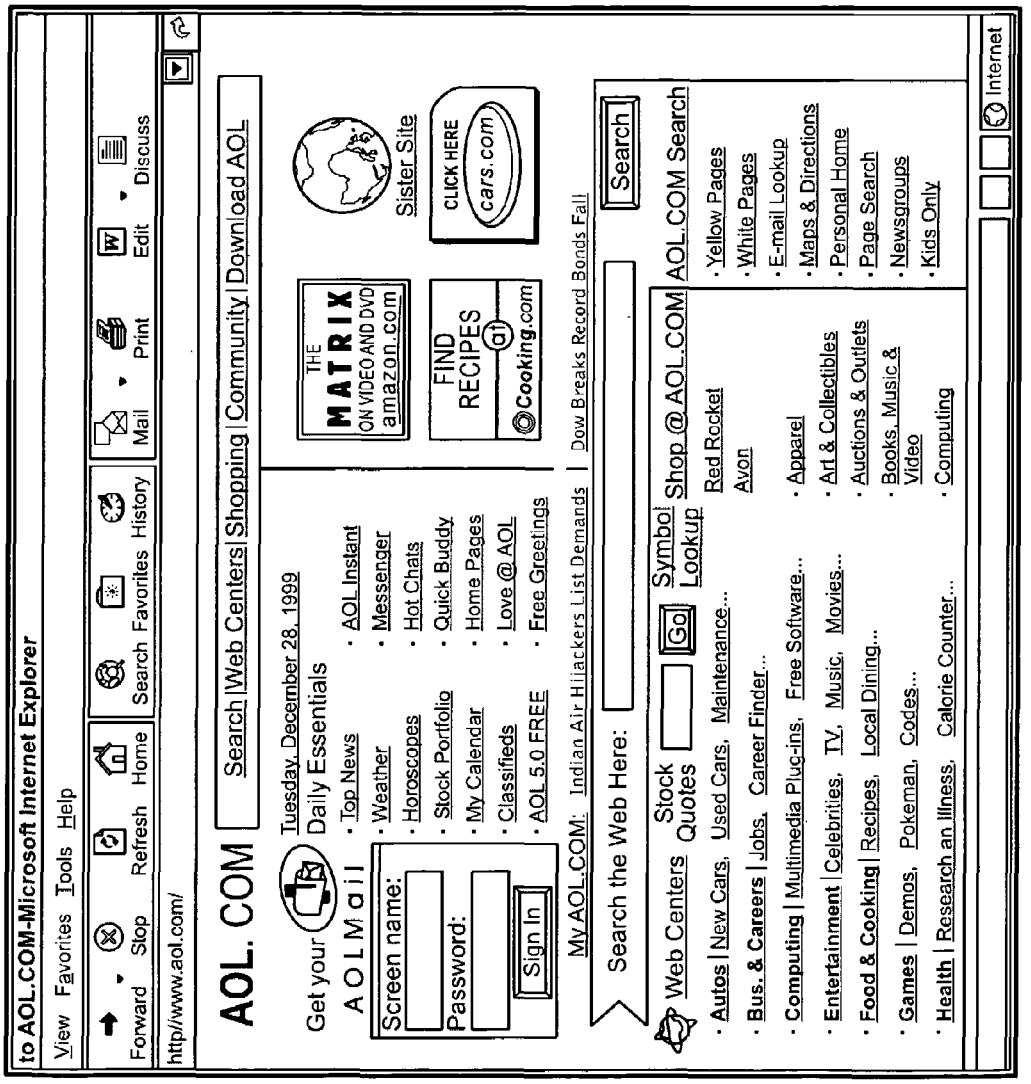

to AOL.COM-Microsoft Internet Explorer
View Favorites Tools Help
Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
http://www.aol.com/
AOL. COM
Search | Web Centers | Shopping | Community | Download AOL
Tuesday, December 28, 1999
Get your AOL Mail
Daily Essentials
· Top News
· Weather
· Horoscopes
· Stock Portfolio
· My Calendar
· Classifieds
· AOL 5.0 FREE
· AOL Instant Messenger
· Hot Chats
· Quick Buddy
· Home Pages
· Love @ AOL
· Free Greetings
Screen name:
Password:
Sign In
My AOL.COM: Indian Air Hijackers List Demands | Dow Breaks Record Bonds Fall
Search the Web Here:
Search
Web Centers
Stock Quotes
Go
Symbol Lookup
Shop @ AOL.COM
AOL.COM Search
· Autos | New Cars, Used Cars, Maintenance...
· Bus. & Careers | Jobs, Career Finder...
· Computing | Multimedia Plug-ins, Free Software...
· Entertainment | Celebrities, TV, Music, Movies...
· Food & Cooking | Recipes, Local Dining...
· Games | Demos, Pokeman, Codes...
· Health | Research an Illness, Calorie Counter...
· Computing
Red Rocket
Avon
· Apparel
· Art & Collectibles
· Auctions & Outlets
· Books, Music & Video
· Yellow Pages
· White Pages
· E-mail Lookup
· Maps & Directions
· Personal Home
· Page Search
· Newsgroups
· Kids Only
THE MATRIX ON VIDEO AND DVD amazon.com
Sister Site
FIND RECIPES
Cooking.com
CLICK HERE
cars.com
Internet

FIG. 2A

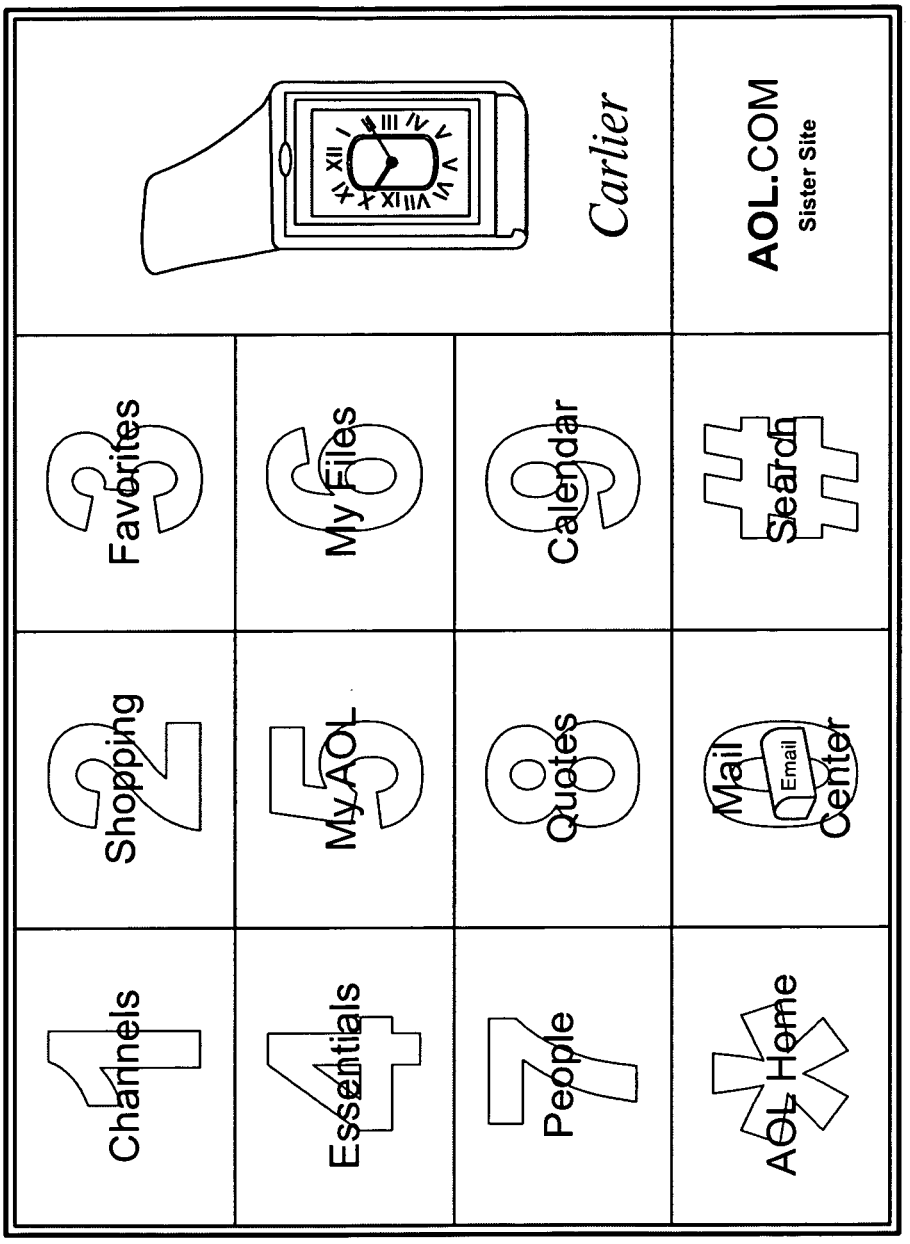

Channels
Shopping
Favorites
Essentials
My AOL
My Files
People
Quotes
Calendar
AOL Home
Mail
Email
Center
Search
Carlier
AOL.COM
Sister Site

FIG. 2B

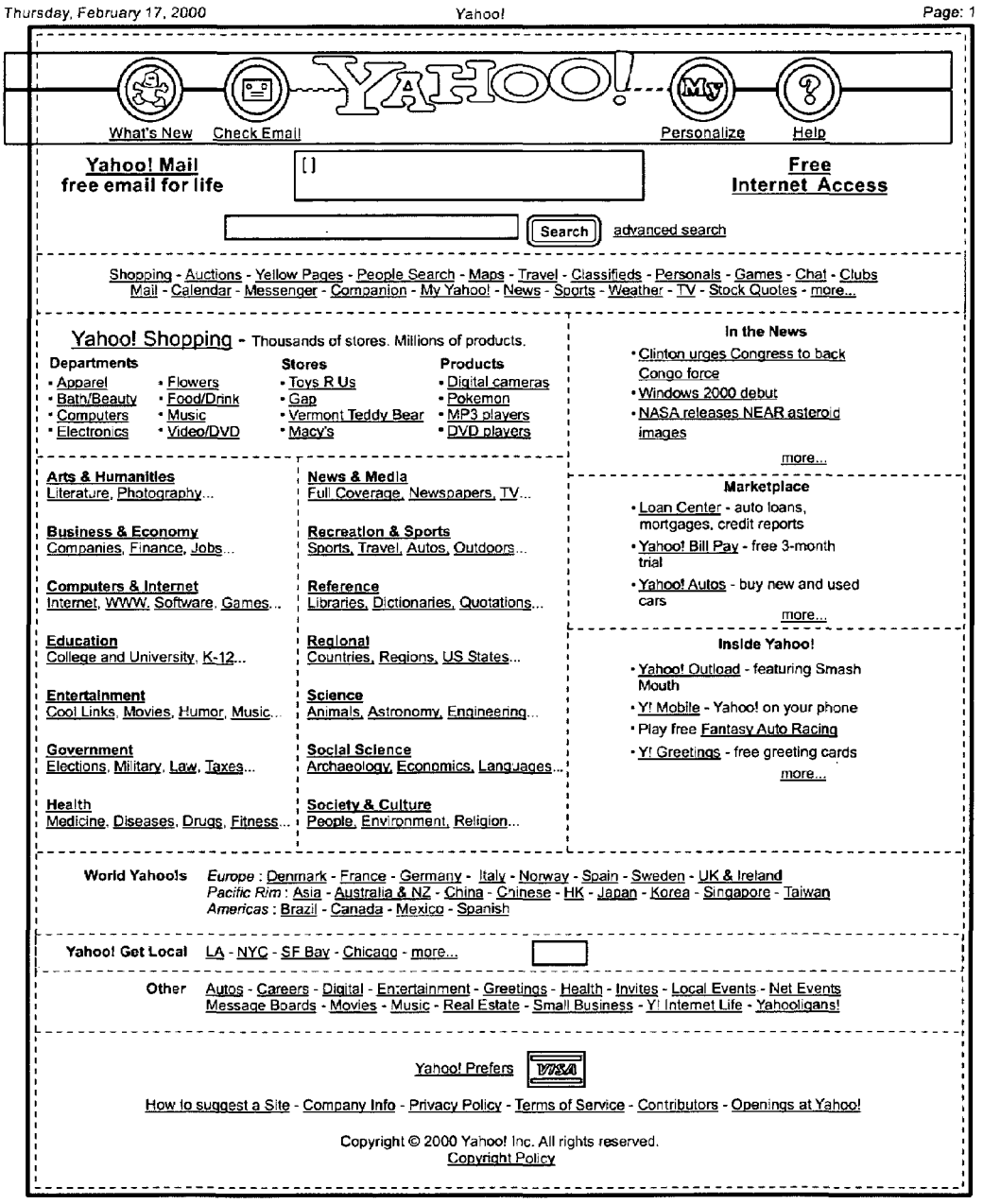

Thursday, February 17, 2000
Yahoo!
Page: 1
YAHOO!
What's New
Check Email
Personalize
Help
Yahoo! Mail
free email for life
Free
Internet Access
Search
advanced search
Shopping - Auctions - Yellow Pages - People Search - Maps - Travel - Classifieds - Personals - Games - Chat - Clubs
Mail - Calendar - Messenger - Companion - My Yahoo! - News - Sports - Weather - TV - Stock Quotes - more...
Yahoo! Shopping - Thousands of stores. Millions of products.
Departments
Apparel
Bath/Beauty
Computers
Electronics
Flowers
Food/Drink
Music
Video/DVD
Stores
Toys R Us
Gap
Vermont Teddy Bear
Macy's
Products
Digital cameras
Pokemon
MP3 players
DVD players
In the News
Clinton urges Congress to back Congo force
Windows 2000 debut
NASA releases NEAR asteroid images
more...
Arts & Humanities
Literature, Photography...
Business & Economy
Companies, Finance, Jobs...
Computers & Internet
Internet, WWW, Software, Games...
Education
College and University, K-12...
Entertainment
Cool Links, Movies, Humor, Music...
Government
Elections, Military, Law, Taxes...
Health
Medicine, Diseases, Drugs, Fitness...
News & Media
Full Coverage, Newspapers, TV...
Recreation & Sports
Sports, Travel, Autos, Outdoors...
Reference
Libraries, Dictionaries, Quotations...
Regional
Countries, Regions, US States...
Science
Animals, Astronomy, Engineering...
Social Science
Archaeology, Economics, Languages...
Society & Culture
People, Environment, Religion...
Marketplace
Loan Center - auto loans, mortgages, credit reports
Yahoo! Bill Pay - free 3-month trial
Yahoo! Autos - buy new and used cars
more...
Inside Yahoo!
Yahoo! Outload - featuring Smash Mouth
Y! Mobile - Yahoo! on your phone
Play free Fantasy Auto Racing
Y! Greetings - free greeting cards
more...
World Yahoo!s
Europe : Denmark - France - Germany - Italy - Norway - Spain - Sweden - UK & Ireland
Pacific Rim : Asia - Australia & NZ - China - Chinese - HK - Japan - Korea - Singapore - Taiwan
Americas : Brazil - Canada - Mexico - Spanish
Yahoo! Get Local
LA - NYC - SF Bay - Chicago - more...
Other
Autos - Careers - Digital - Entertainment - Greetings - Health - Invites - Local Events - Net Events
Message Boards - Movies - Music - Real Estate - Small Business - Y! Internet Life - Yahooligans!
Yahoo! Prefers
VISA
How to suggest a Site - Company Info - Privacy Policy - Terms of Service - Contributors - Openings at Yahoo!
Copyright © 2000 Yahoo! Inc. All rights reserved.
Copyright Policy
http://www.yahoo.com/

FIG. 2C

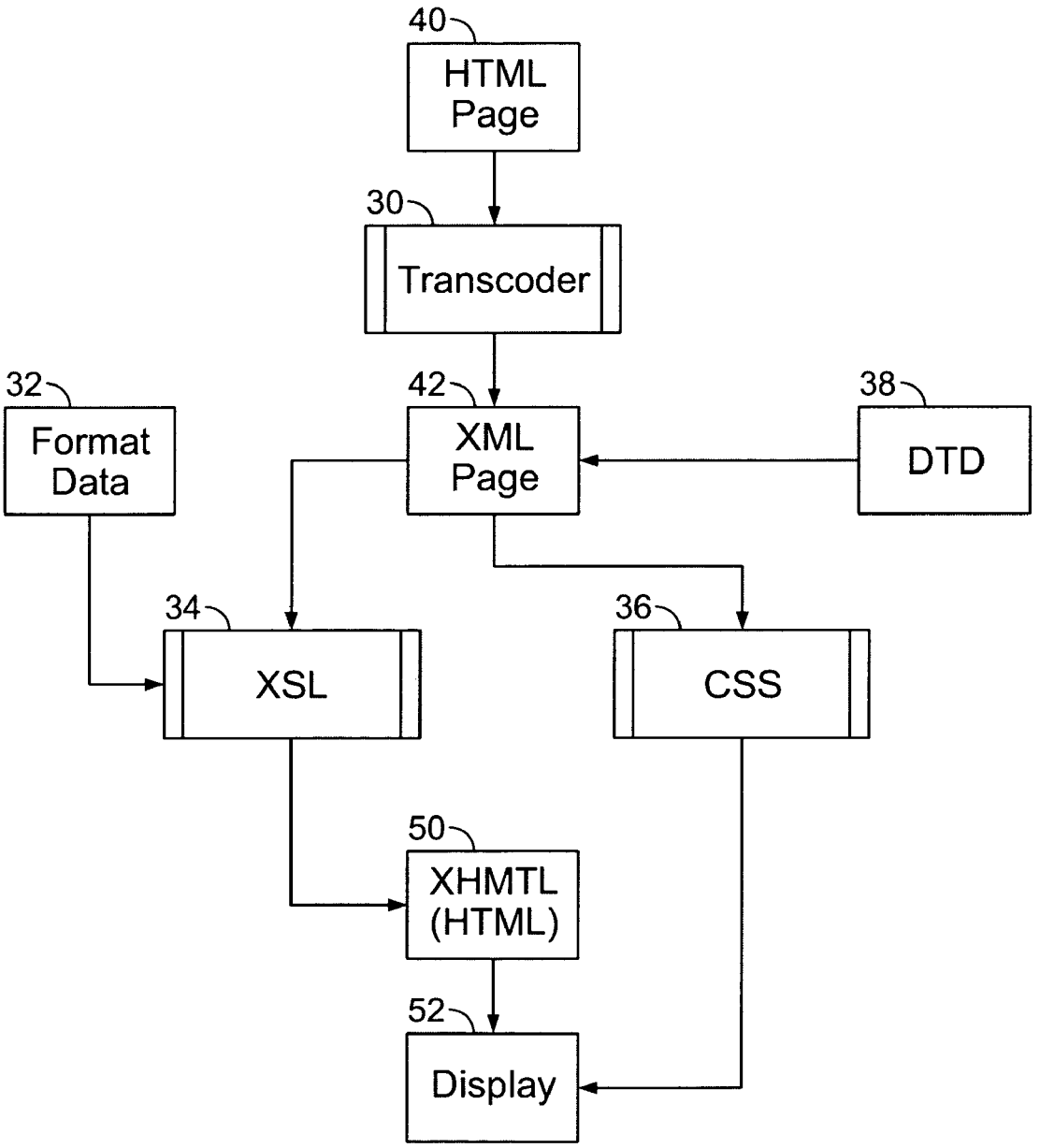

40
HTML Page
30
Transcoder
32
Format Data
42
XML Page
38
DTD
34
XSL
36
CSS
50
XHMTL (HTML)
52
Display

FIG. 3

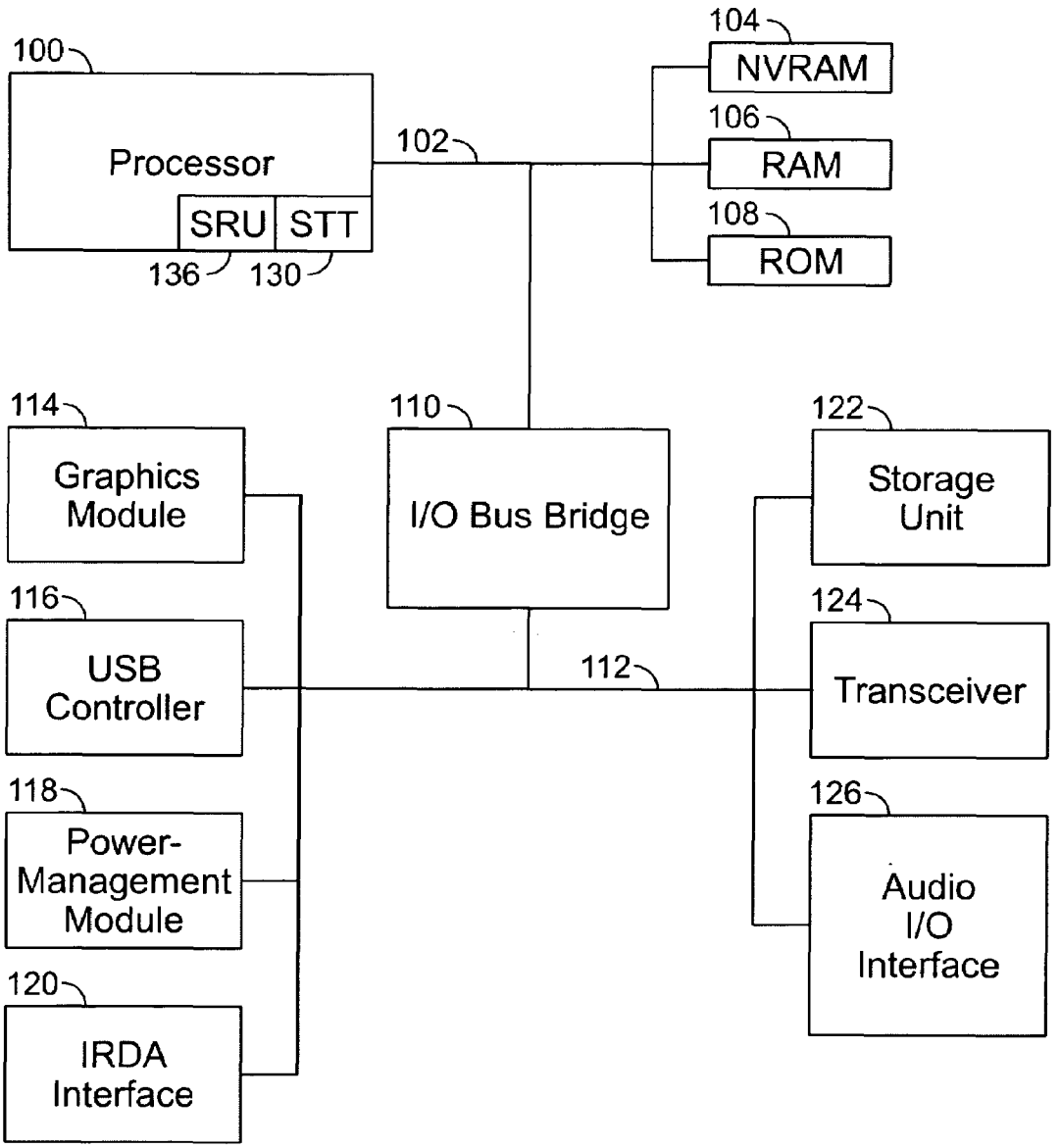

100
Processor
SRU
STT
136
130
102
104
NVRAM
106
RAM
108
ROM
110
I/O Bus Bridge
112
114
Graphics Module
116
USB Controller
118
Power-Management Module
120
IRDA Interface
122
Storage Unit
124
Transceiver
126
Audio I/O Interface

FIG. 4

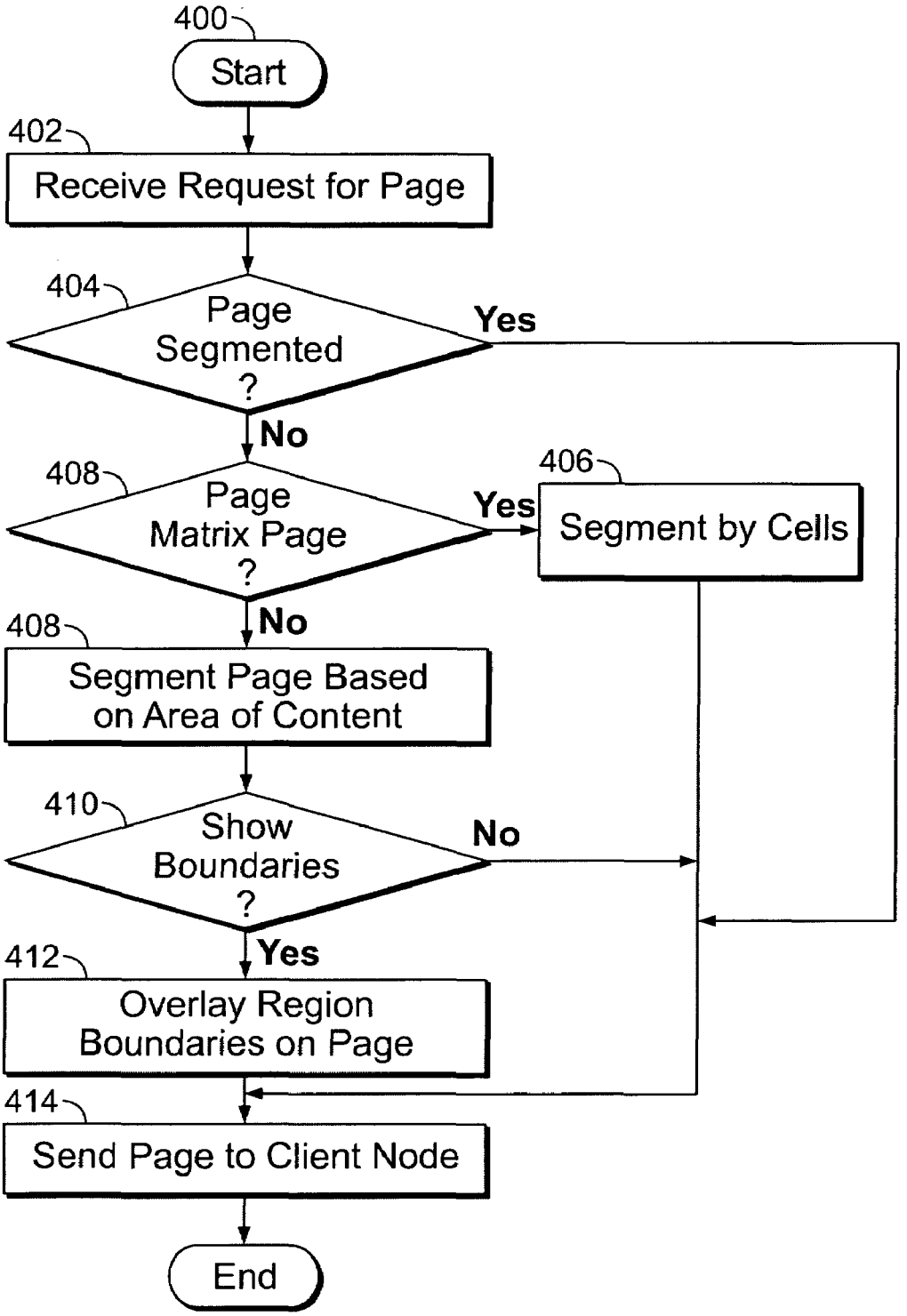

400
Start
402
Receive Request for Page
404
Page Segmented ?
Yes
No
406
Segment by Cells
408
Page Matrix Page ?
Yes
No
408
Segment Page Based on Area of Content
410
Show Boundaries ?
No
Yes
412
Overlay Region Boundaries on Page
414
Send Page to Client Node
End

FIG. 5A

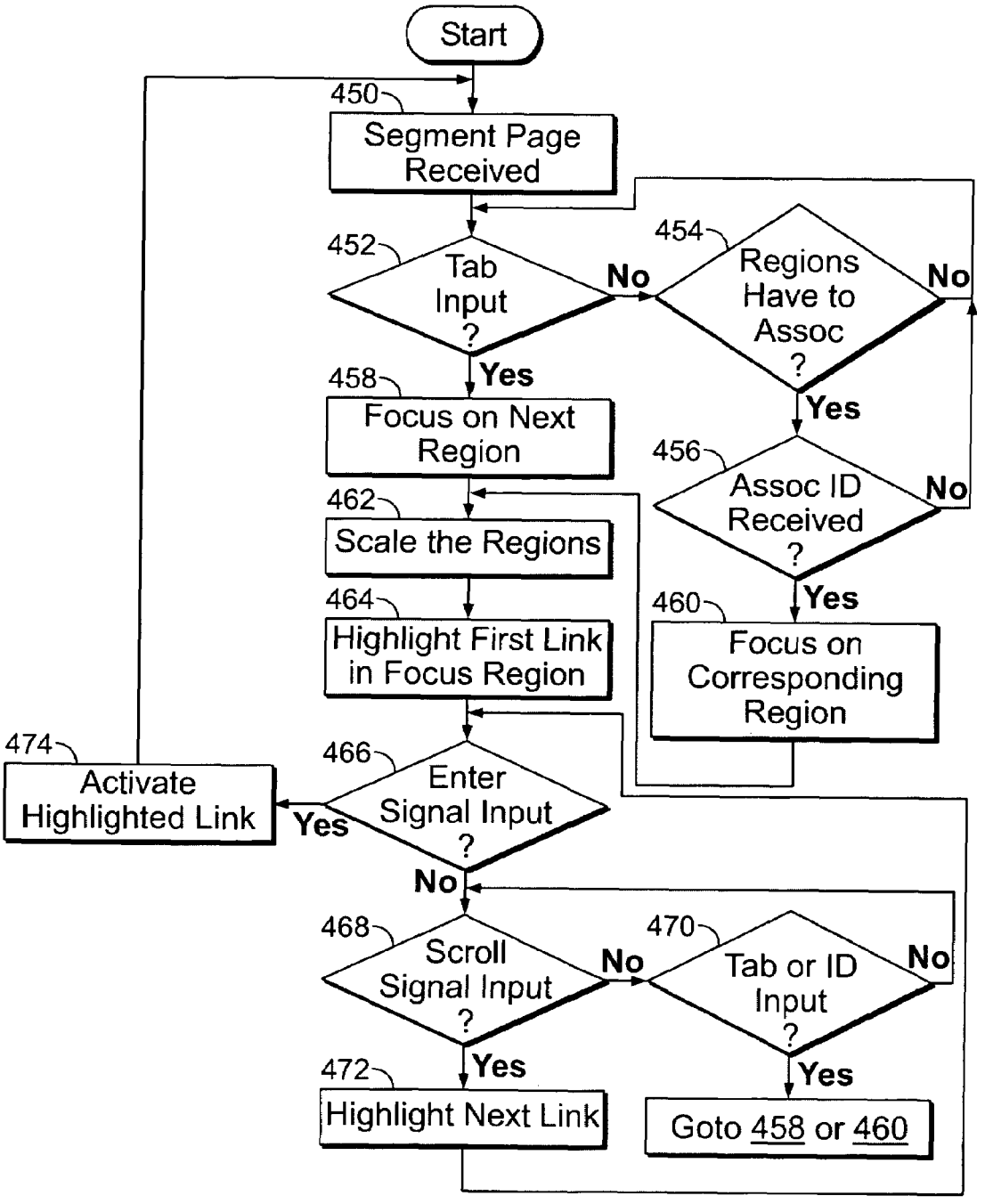

Start
450
Segment Page Received
452
Tab Input ?
No
454
Regions Have to Assoc ?
No
Yes
458
Focus on Next Region
Yes
456
Assoc ID Received ?
No
462
Scale the Regions
Yes
460
Focus on Corresponding Region
464
Highlight First Link in Focus Region
474
Activate Highlighted Link
466
Enter Signal Input ?
Yes
No
468
Scroll Signal Input ?
No
470
Tab or ID Input ?
No
Yes
472
Highlight Next Link
Yes
Goto 458 or 460

FIG. 5B

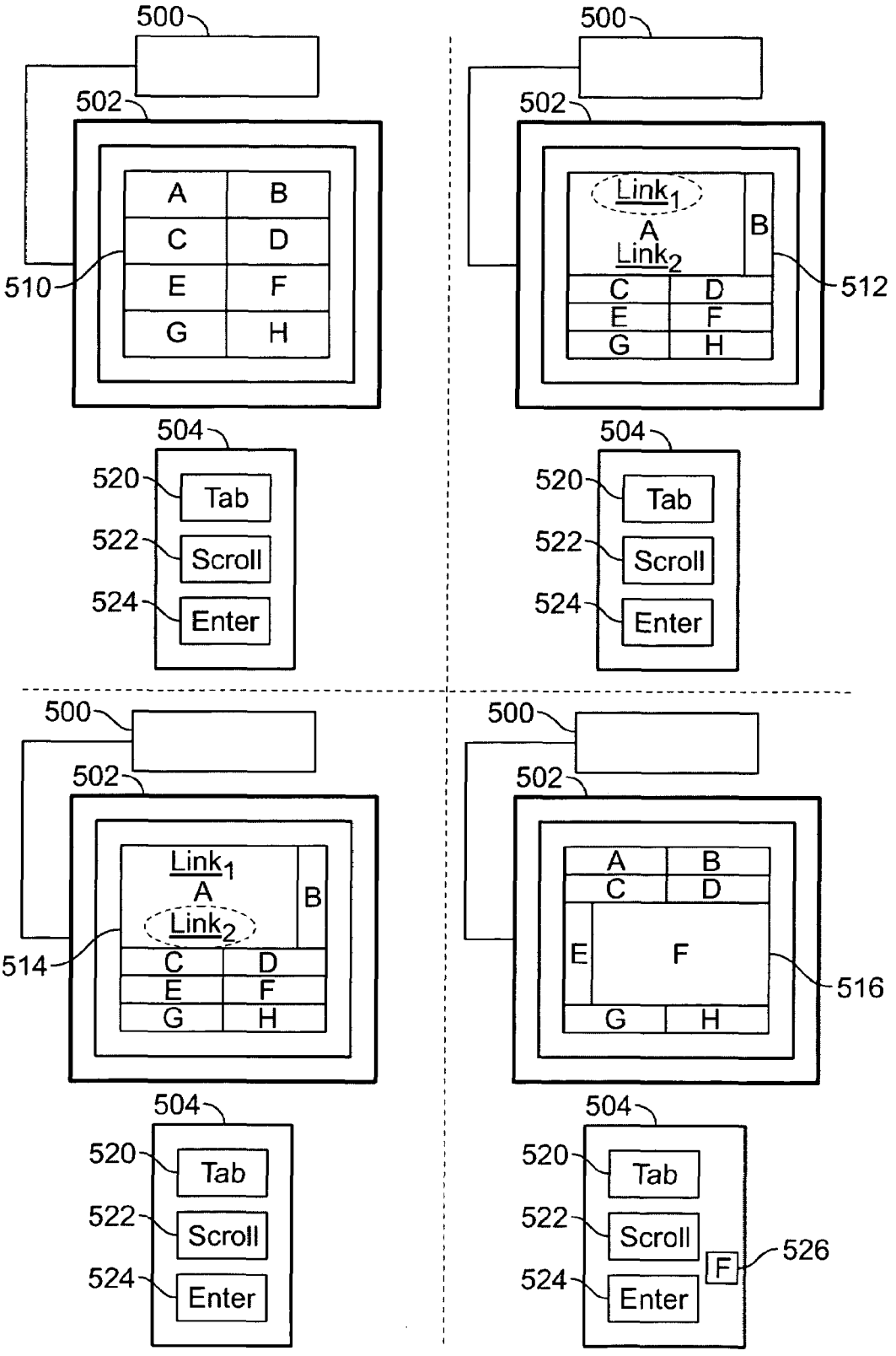

500
502
A
B
C
D
E
F
G
H
510
504
520
Tab
522
Scroll
524
Enter
Link1
Link2
512
514
516
526
F

FIG. 5C

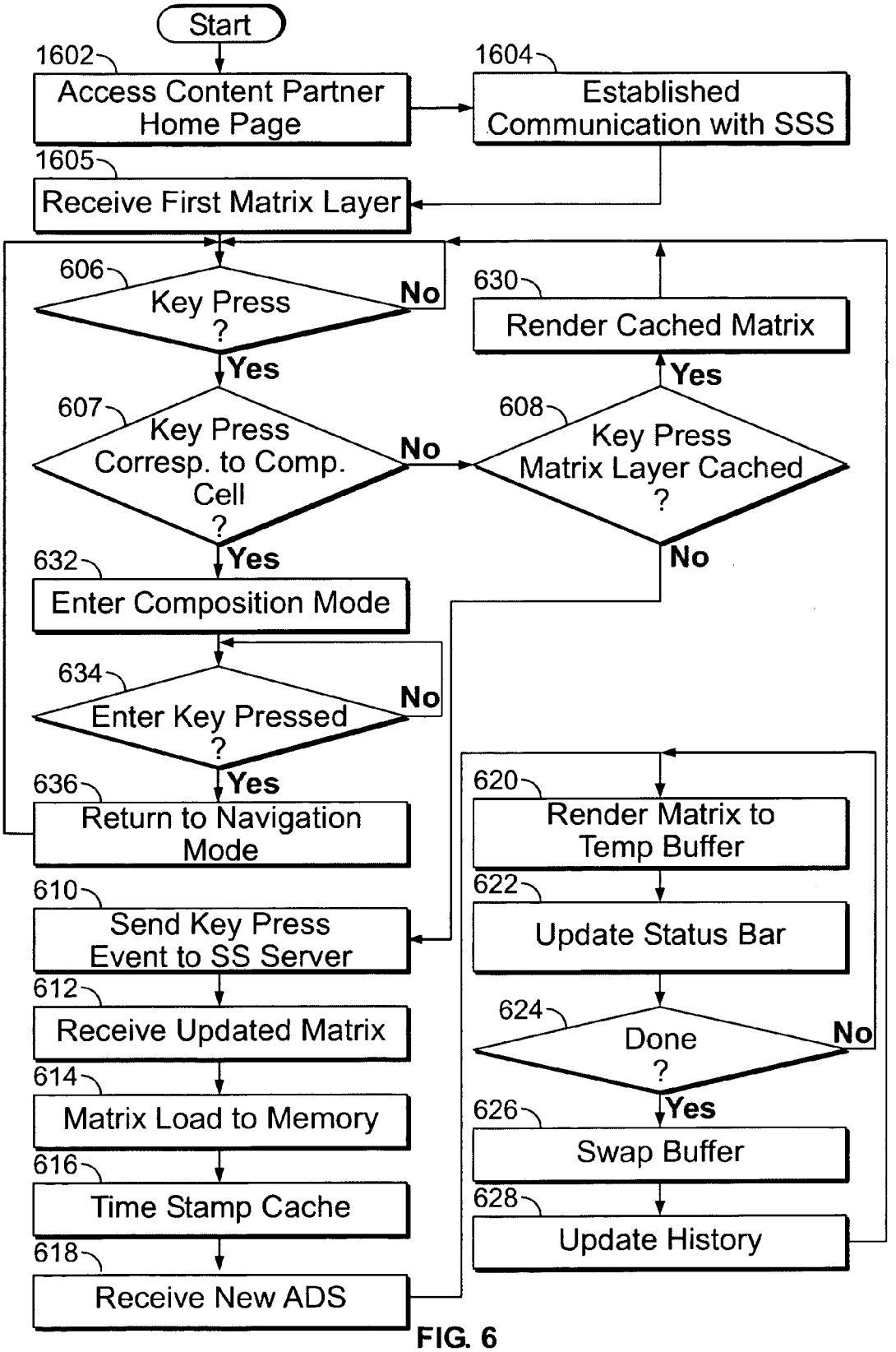

Start
1602
Access Content Partner Home Page
1604
Established Communication with SSS
1605
Receive First Matrix Layer
606
Key Press ?
No
Yes
630
Render Cached Matrix
607
Key Press Corresp. to Comp. Cell ?
No
Yes
608
Key Press Matrix Layer Cached ?
Yes
No
632
Enter Composition Mode
634
Enter Key Pressed ?
No
Yes
636
Return to Navigation Mode
610
Send Key Press Event to SS Server
612
Receive Updated Matrix
614
Matrix Load to Memory
616
Time Stamp Cache
618
Receive New ADS
620
Render Matrix to Temp Buffer
622
Update Status Bar
624
Done ?
No
Yes
626
Swap Buffer
628
Update History

FIG. 6

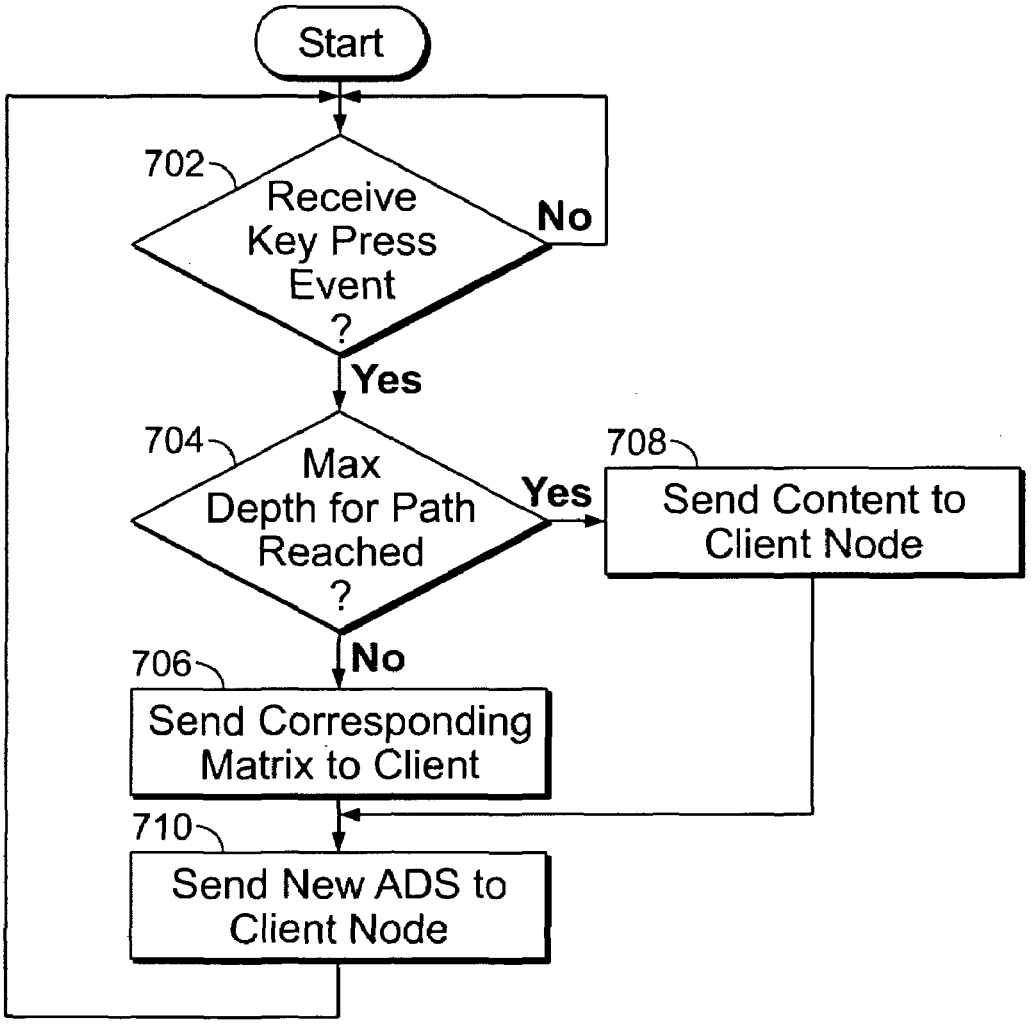

Start
702
Receive Key Press Event ?
No
Yes
704
Max Depth for Path Reached ?
Yes
708
Send Content to Client Node
No
706
Send Corresponding Matrix to Client
710
Send New ADS to Client Node

FIG. 7

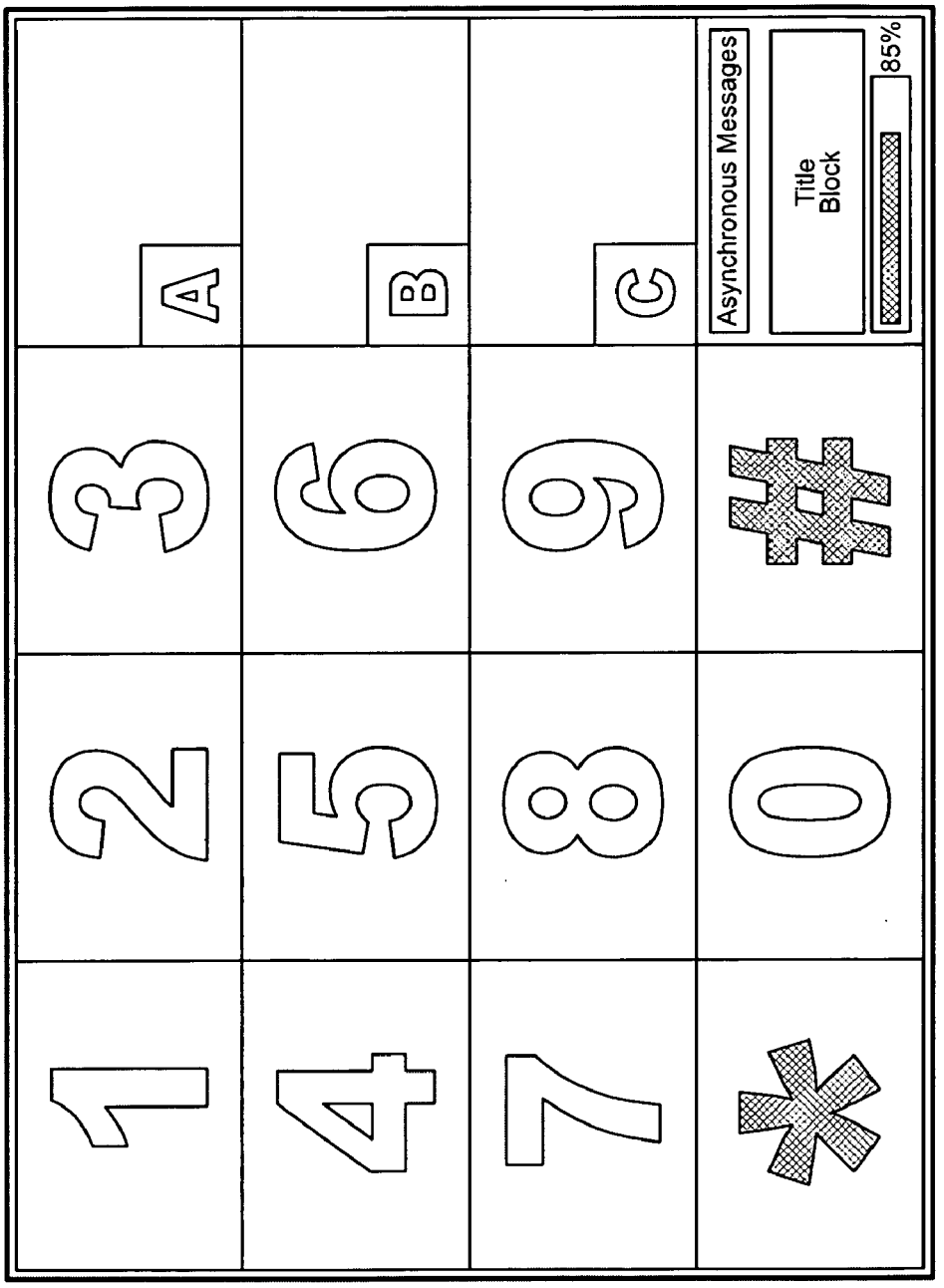


FIG. 8

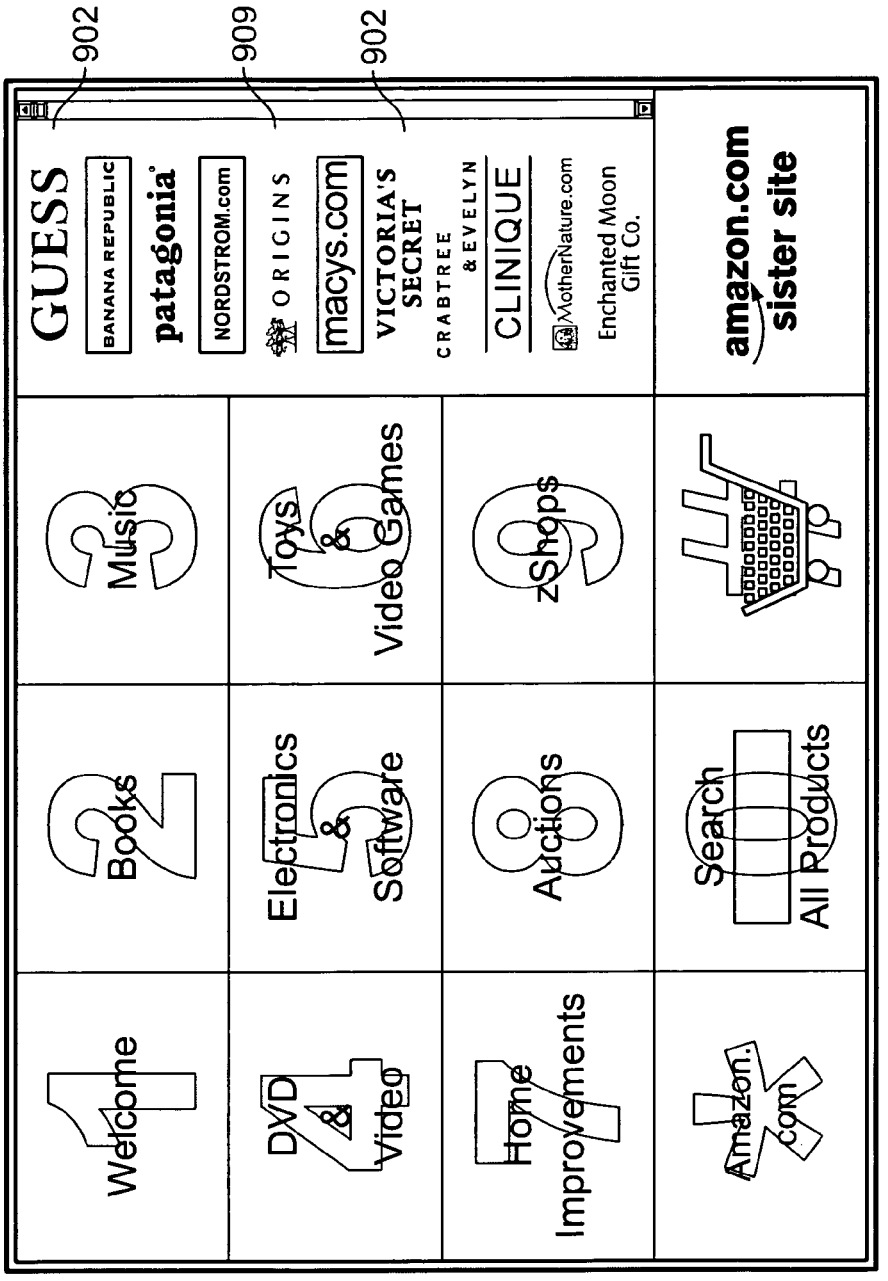

902
909
902
Welcome
Books
Music
DVD & Video
Electronics & Software
Toys & Video Games
Home Improvements
Auctions
zShops
Amazon.com
Search All Products
GUESS
BANANA REPUBLIC
patagonia
NORDSTROM.com
ORIGINS
macys.com
VICTORIA'S SECRET
CRABTREE & EVELYN
CLINIQUE
MotherNature.com
Enchanted Moon Gift Co.
amazon.com sister site

FIG. 9A

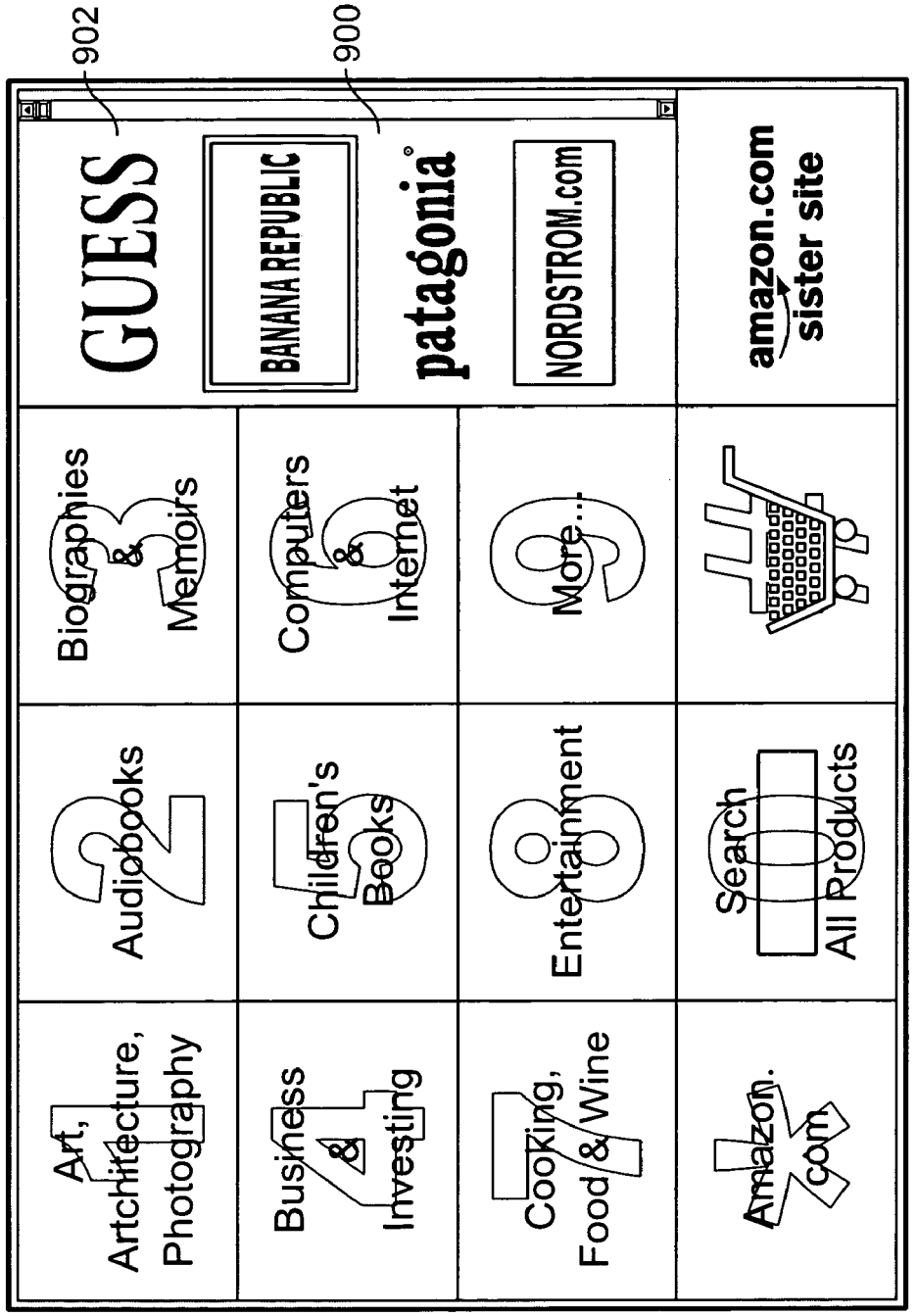

902
900
GUESS
BANANA REPUBLIC
patagonia
NORDSTROM.com
amazon.com
sister site
Biographies & Memoirs
Audiobooks
Computers & Internet
Children's Books
More...
Entertainment
Search All Products
Art, Artchitecture, Photography
Business & Investing
Cooking, Food & Wine
Amazon.com

FIG. 9B

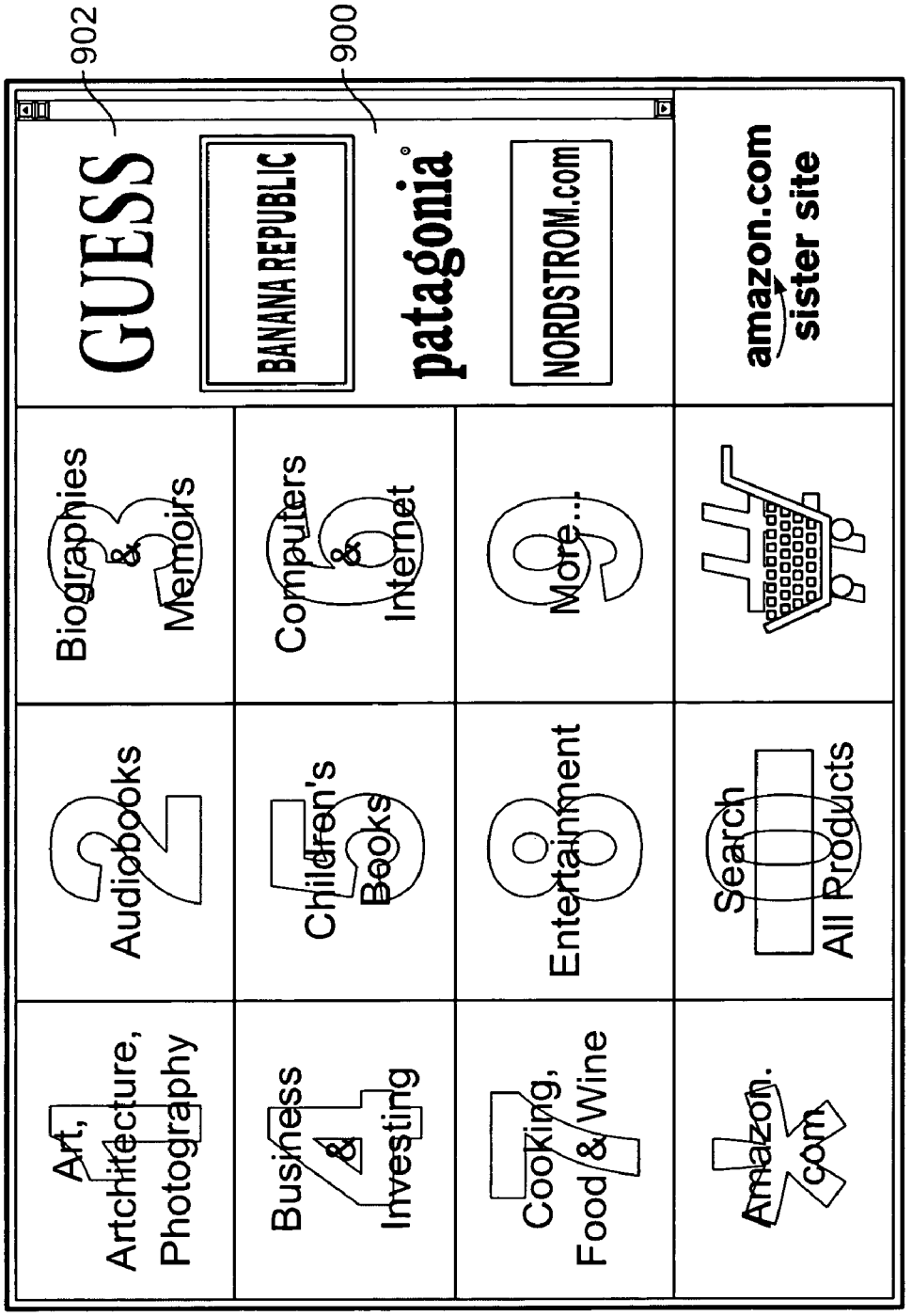

902
900
GUESS
BANANA REPUBLIC
patagonia
NORDSTROM.com
amazon.com
sister site
Biographies & Memoirs
Computers & Internet
More...
Audiobooks
Children's Books
Entertainment
Search All Products
Art, Artchitecture, Photography
Business & Investing
Cooking, Food & Wine
Amazon.com

FIG. 9C

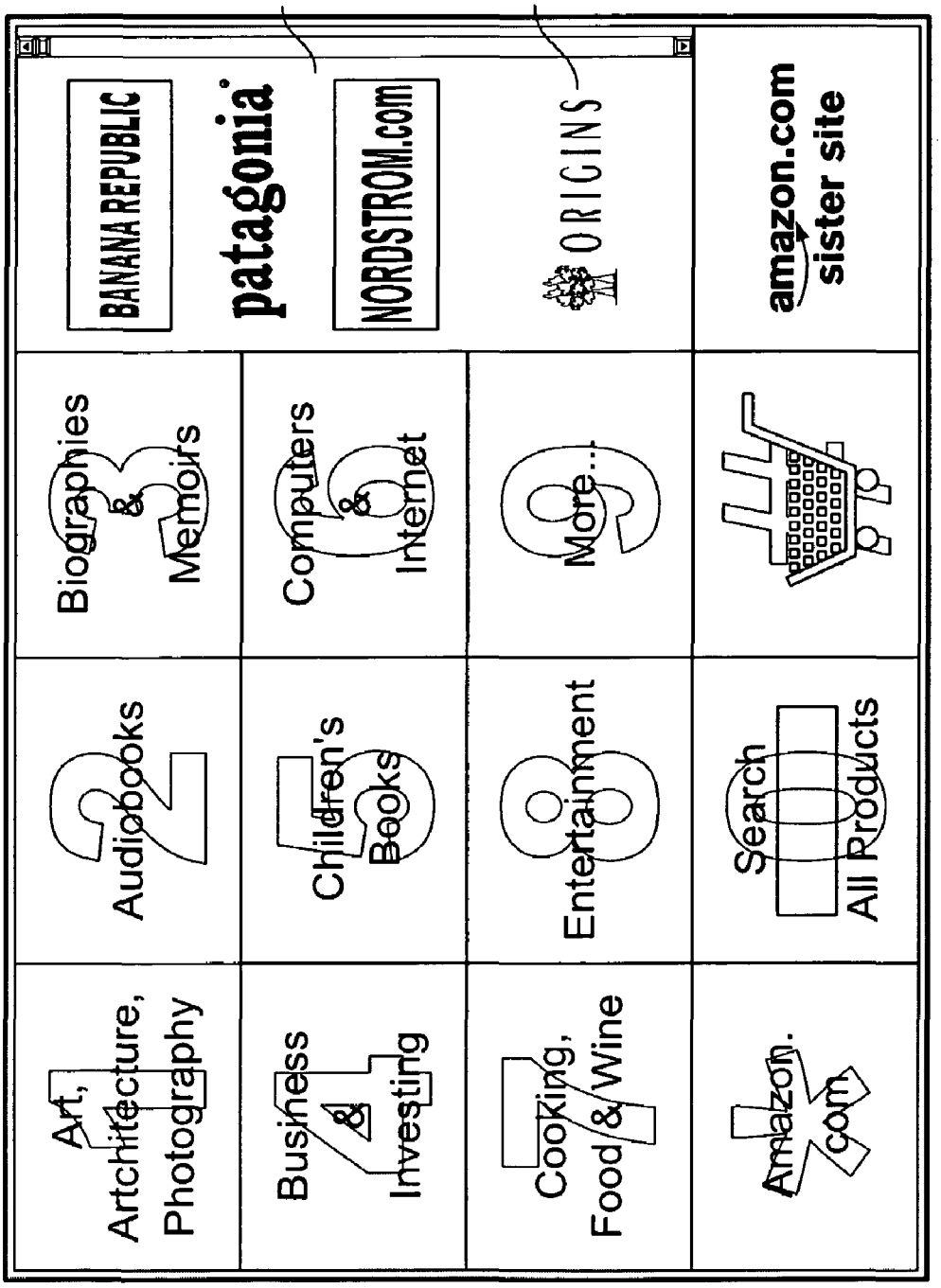

900
904
BANANA REPUBLIC
patagonia
NORDSTROM.com
ORIGINS
amazon.com sister site
Art, Artchitecture, Photography
Audiobooks
Biographies & Memoirs
Business & Investing
Children's Books
Computers & Internet
Cooking, Food & Wine
Entertainment
More...
Amazon.com
Search All Products

FIG. 9D

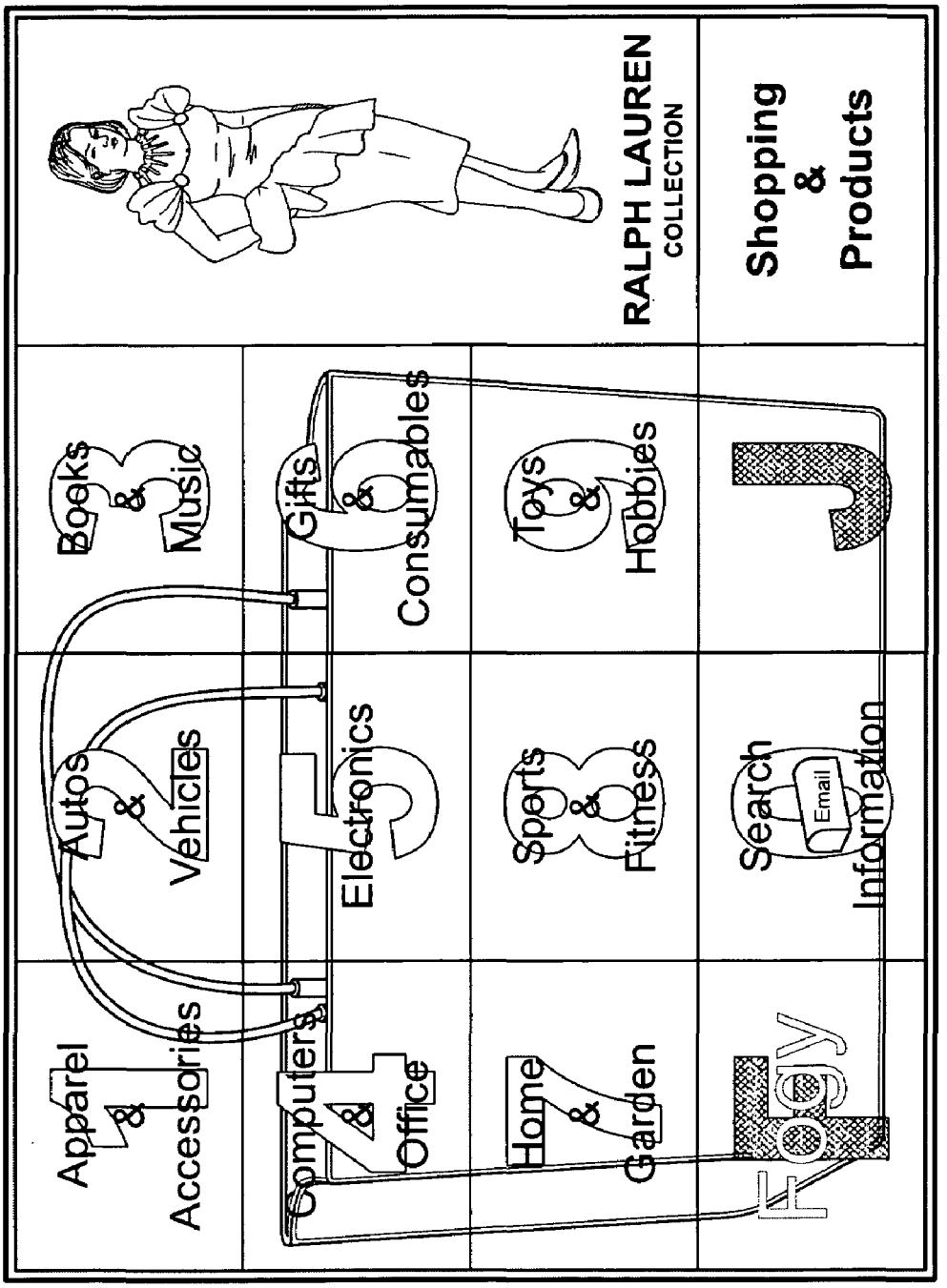

Apparel & Accessories
Autos & Vehicles
Books & Music
Computers & Office
Electronics
Gifts & Consumables
Home & Garden
Sports & Fitness
Toys & Hobbies
Search
Email
Information
RALPH LAUREN
COLLECTION
Shopping & Products

FIG. 10A

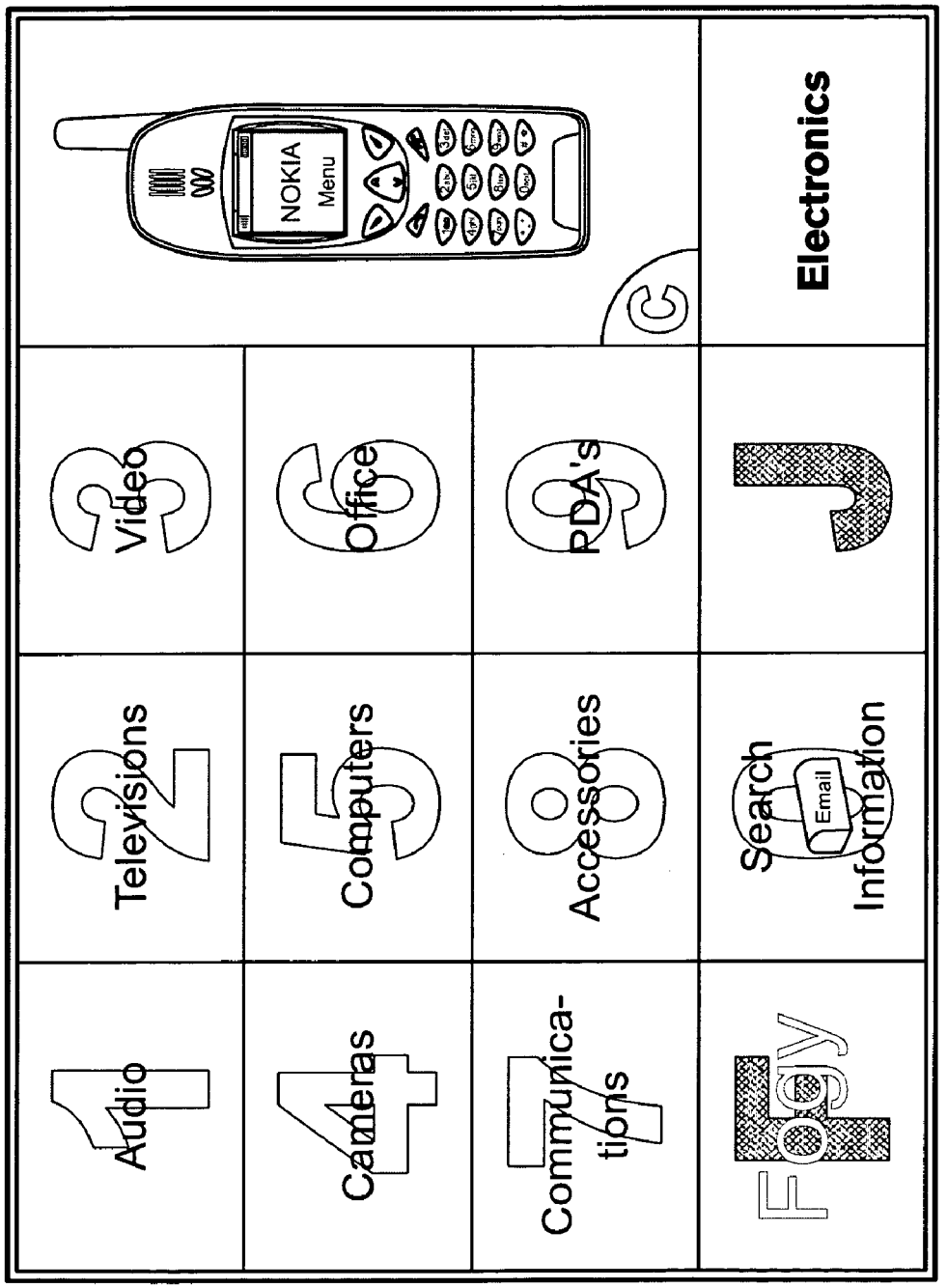

Audio
Televisions
Video
Cameras
Computers
Office
Communica-tions
Accessories
PDA's
Search
Email
Information
Electronics
NOKIA
Menu

FIG. 10B

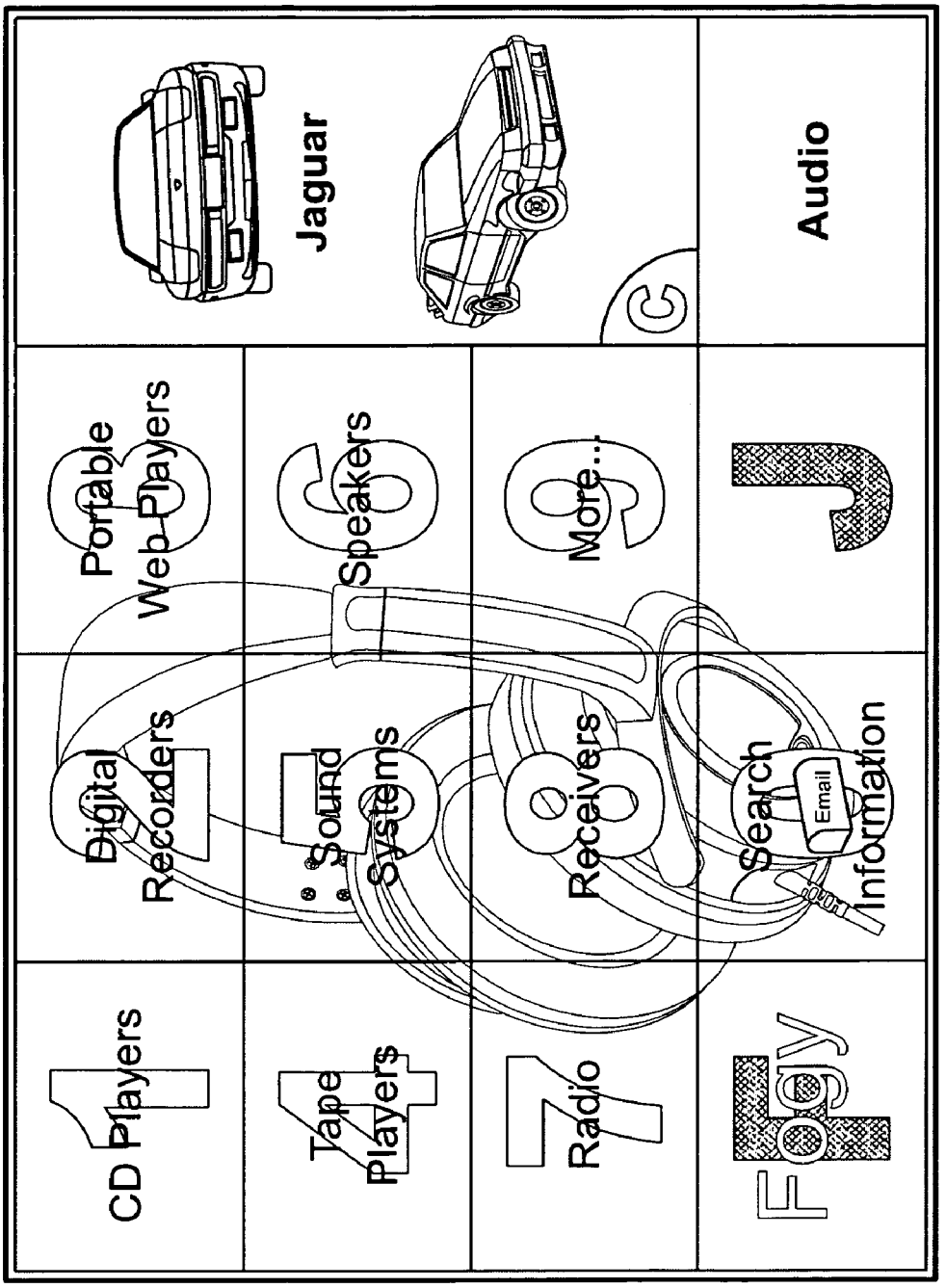

CD Players
Digital Recorders
Portable Web Players
Jaguar
Audio
Tape Players
Sound Systems
Speakers
Radio
Receivers
More...
Search
Email
Information

FIG. 10C

Stereo Only
$150 - $290
Pre-Logic
$180 - $390
Surround
$680 - $800
CR Industry
Report
Foy
Search
Email
Information
dfx
Rockin' Into The Millenium
C
Receivers

FIG. 10D

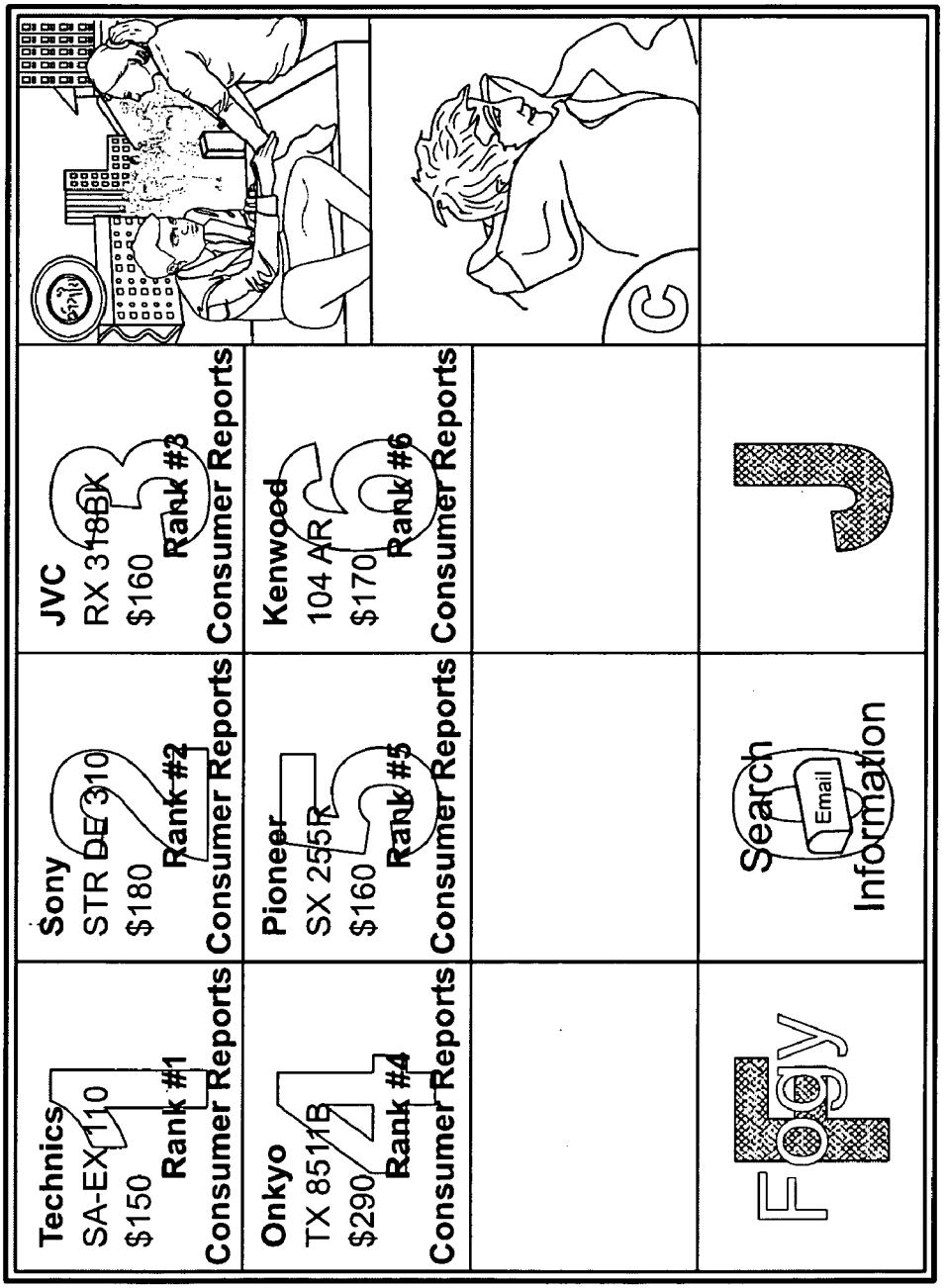

Technics
SA-EX 110
$150
Rank #1
Consumer Reports
Sony
STR DE 310
$180
Rank #2
Consumer Reports
JVC
RX 318BK
$160
Rank #3
Consumer Reports
Onkyo
TX 8511B
$290
Rank #4
Consumer Reports
Pioneer
SX 255R
$160
Rank #5
Consumer Reports
Kenwood
104 AR
$170
Rank #6
Consumer Reports
Ebay
Search
Email
Information
1
2
3
4
5
6

FIG. 10E

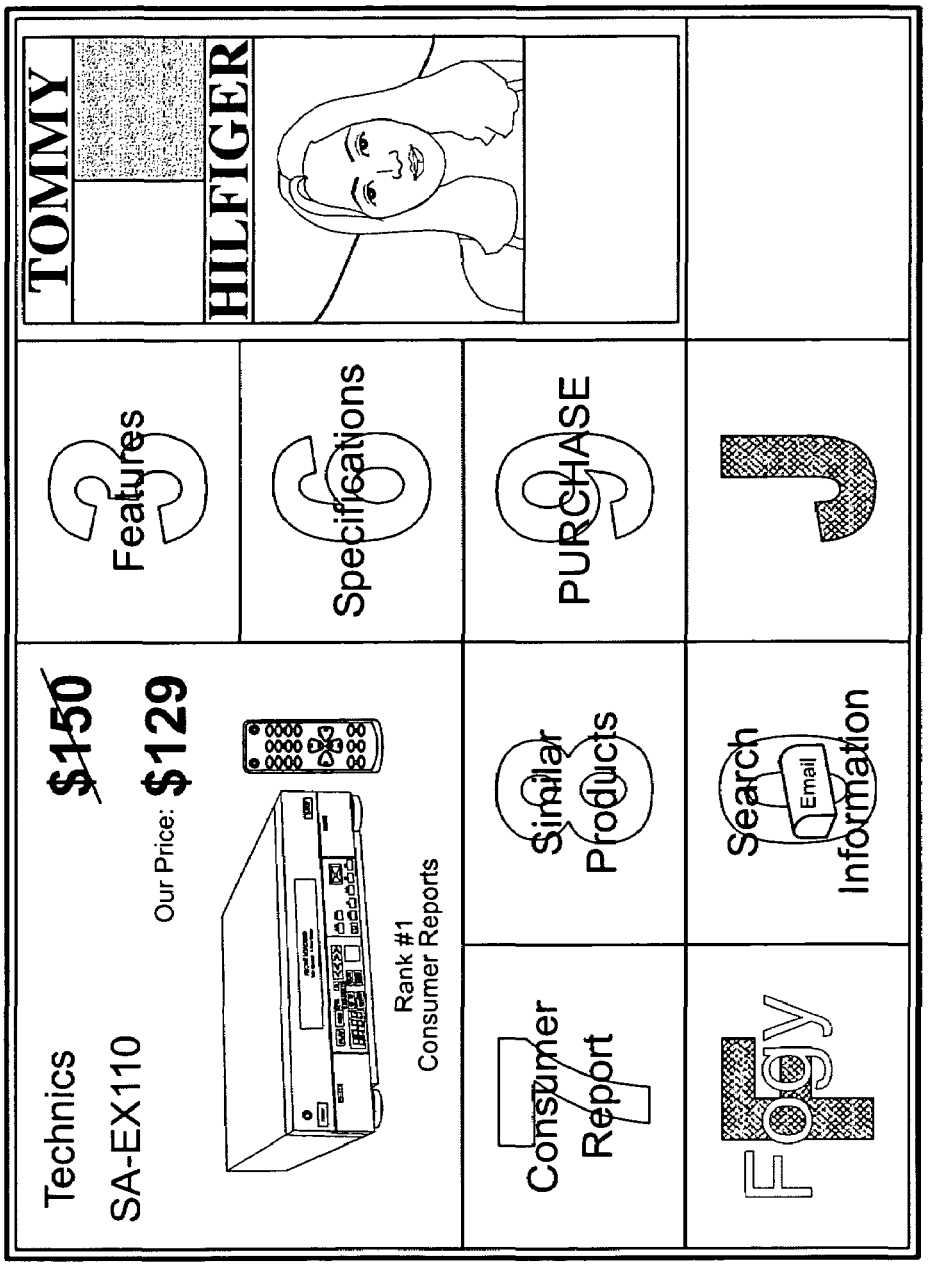

Technics
SA-EX110
$150
Our Price: $129
Rank #1
Consumer Reports
Features
Specifications
PURCHASE
Consumer Report
Similar Products
Search
Email
Information
TOMMY
HILFIGER

FIG. 10F

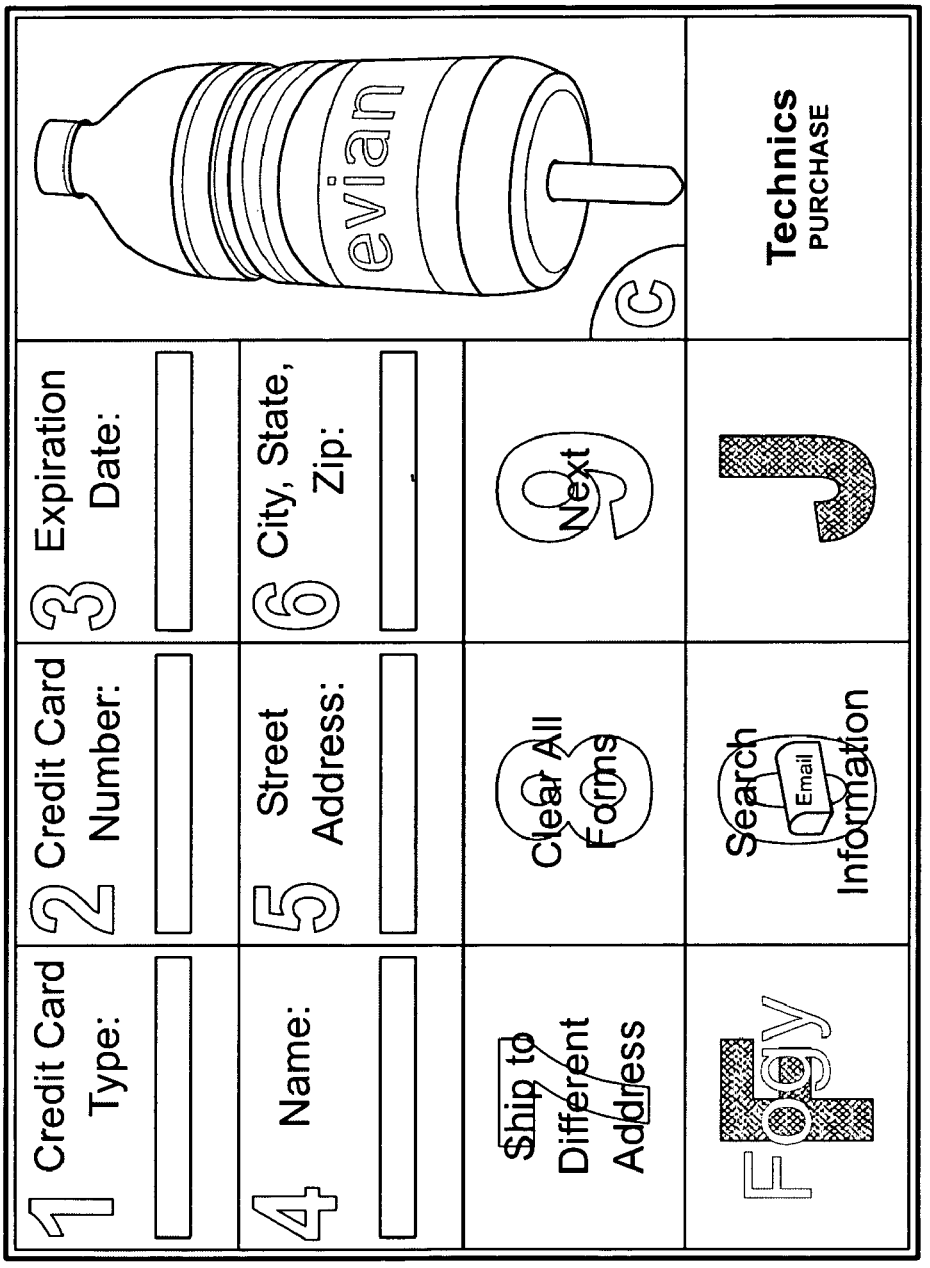

1 Credit Card Type:
2 Credit Card Number:
3 Expiration Date:
4 Name:
5 Street Address:
6 City, State, Zip:
Ship to Different Address
Clear All Forms
Next
Search
Email
Information
evian
Technics
PURCHASE

FIG. 10G

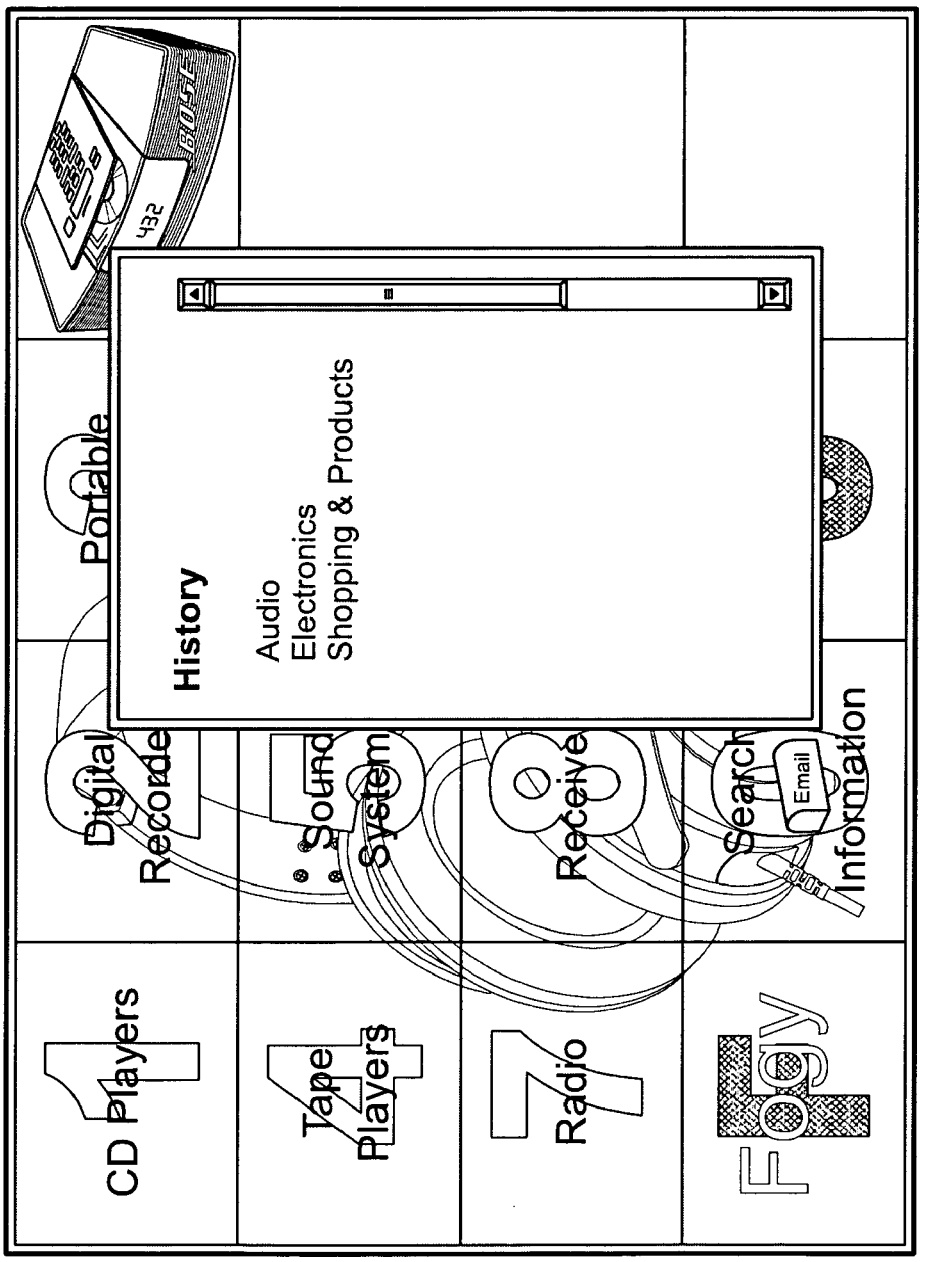

CD Players
Tape Players
Radio
Portable
Digital Recorde
Sound System
Receive
Search
Email
Information
History
Audio
Electronics
Shopping & Products

FIG. 11

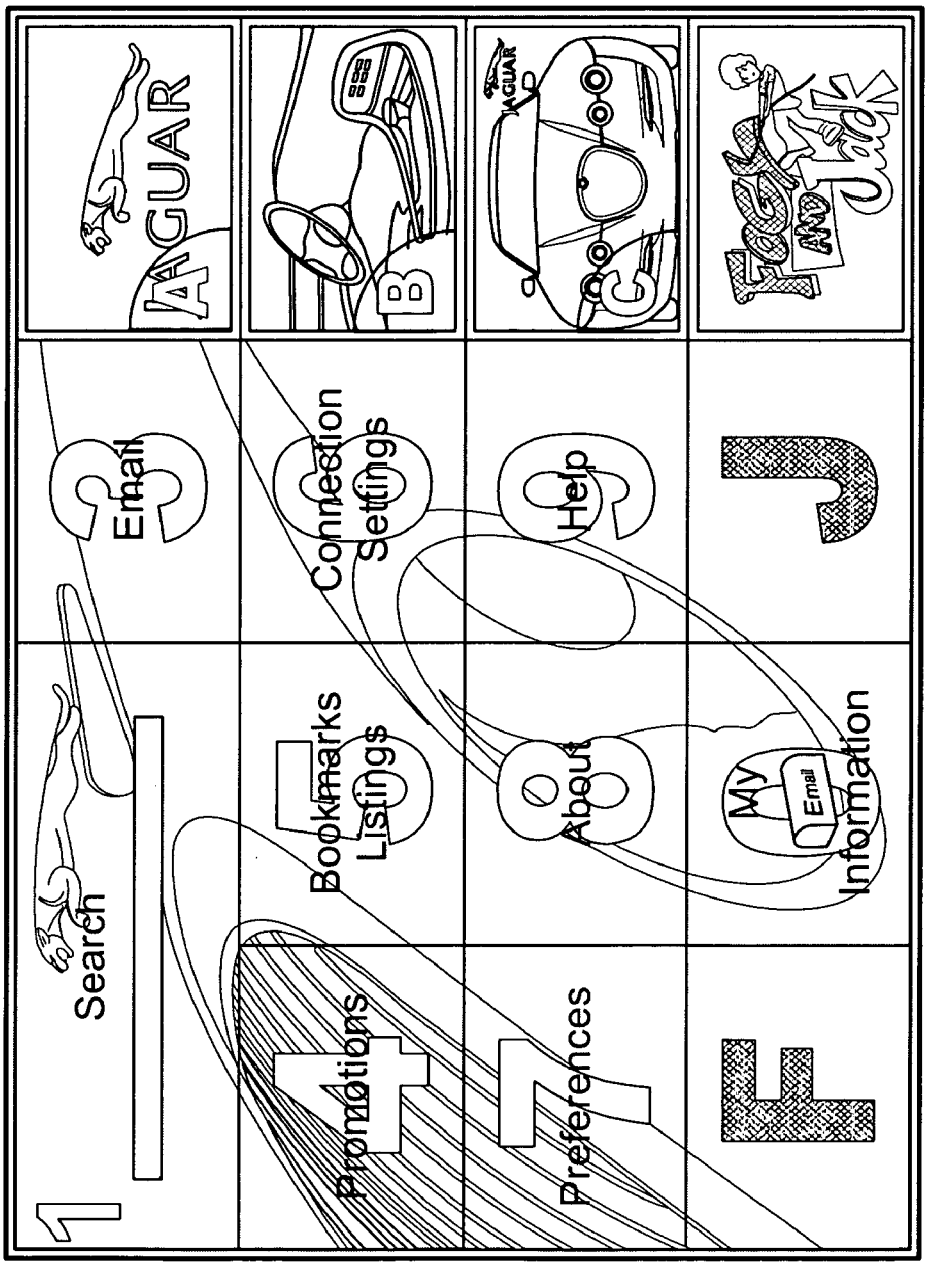

1
Search
2
Email
A
B
C
Bookmarks
Listings
10
Connection
Settings
9
Help
8
About
4
Promotions
7
Preferences
F
My
Information
J

FIG. 12A

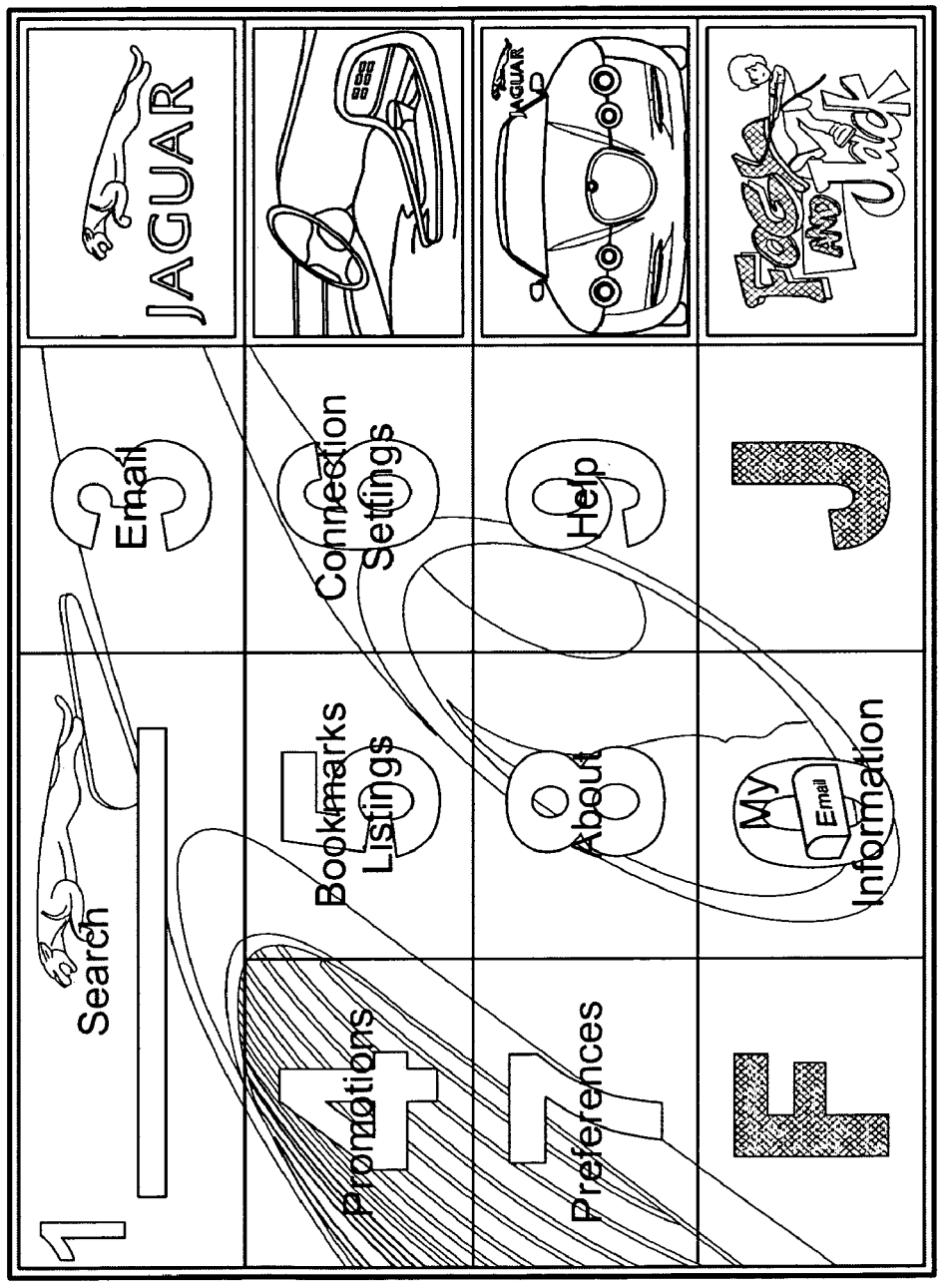

1
Search
2
Email
JAGUAR
3
Connection Settings
4
Promotions
5
Bookmarks Listings
6
Help
7
Preferences
8
About
9
My Information
Email

FIG. 12B

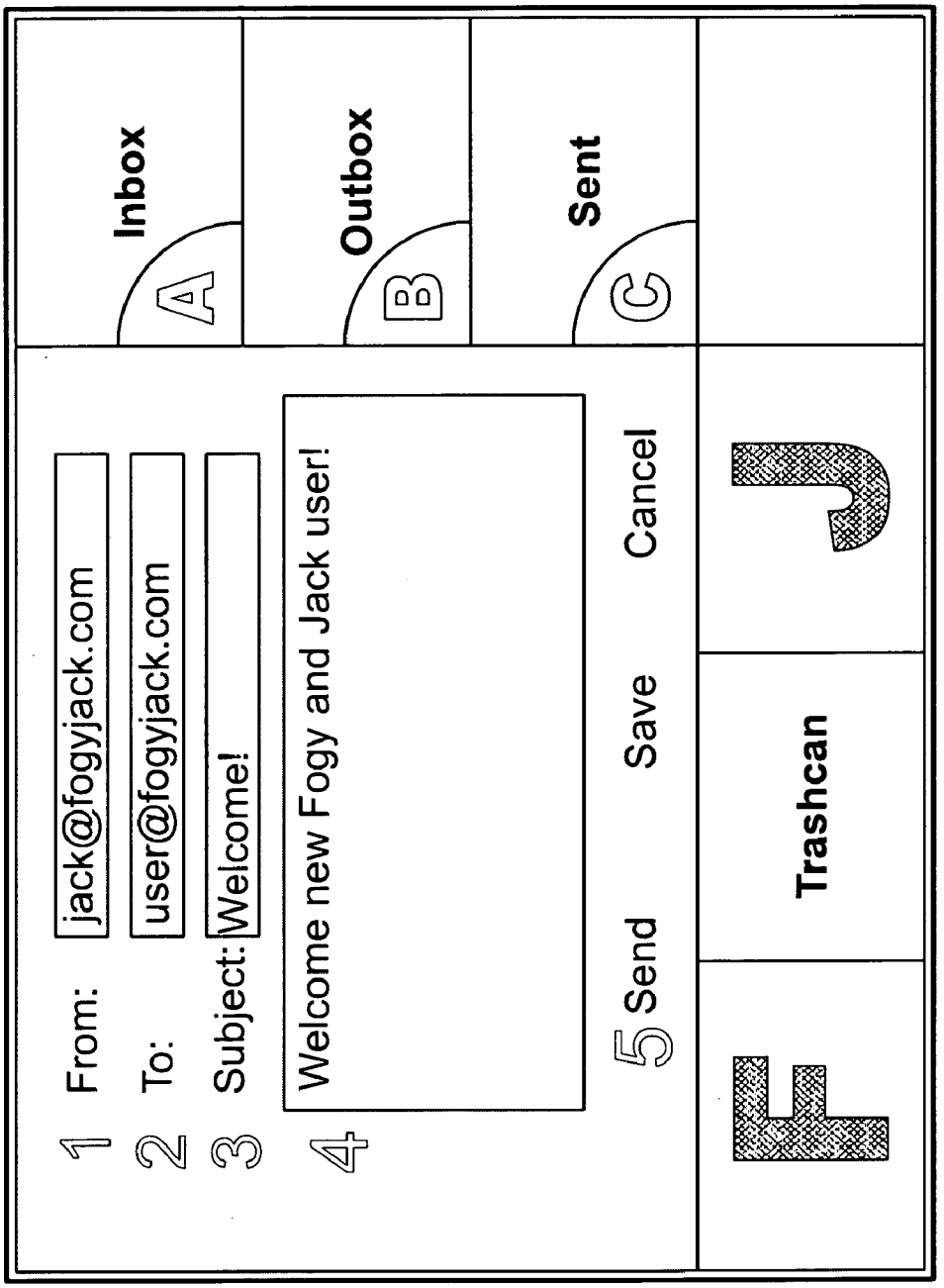

Inbox
A
Outbox
B
Sent
C
1 From: jack@fogyjack.com
2 To: user@fogyjack.com
3 Subject: Welcome!
4 Welcome new Fogy and Jack user!
5 Send
Save
Cancel
F
Trashcan
J

FIG. 13

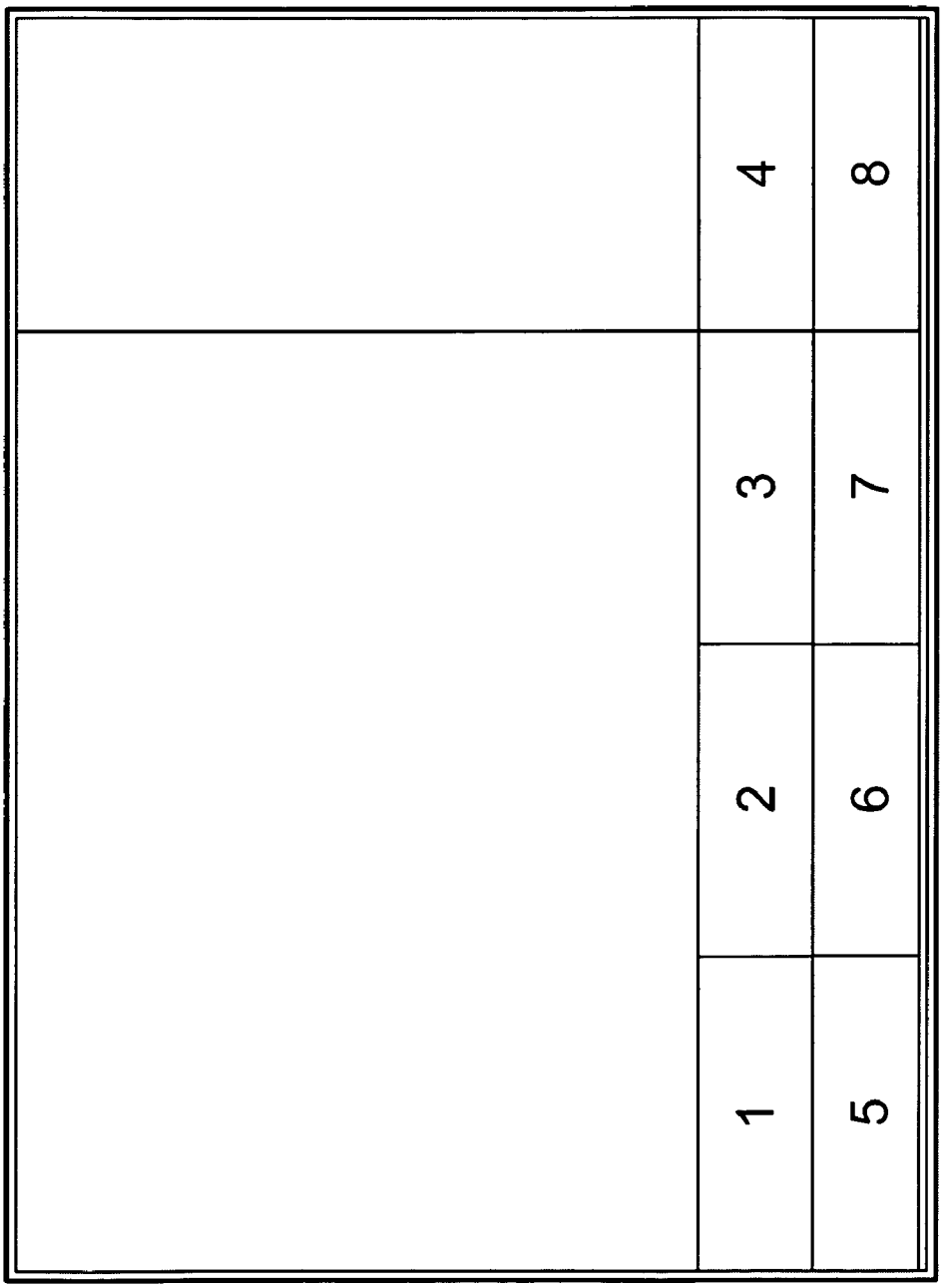


FIG. 14

NAVIGATING INTERNET CONTENT ON A TELEVISION USING A SIMPLIFIED INTERFACE AND A REMOTE CONTROL

This is a continuation-in-part of Ser. No. 09/440,214, entitled AN APPARATUS AND METHOD FOR SIMPLE WIDE-AREA NETWORK NAVIGATION, filed Nov. 15, 1999, now U.S. Pat. No. 6,600,497.

BACKGROUND

(1) Field of the Invention

The invention relates to electronic information services and electronic commerce services. More specifically, the invention relates to providing easy navigation to facilitate access to such services and improved web access through a television display, internet appliance, and wireless devices.

(2) Background

The importance of the Internet as a tool of electronic commerce can not be overstated. The ability of consumers to buy products, obtain information from the comfort of their own home is revolutionizing the way business is done. Increasingly, there is a push to provide access to the Internet on standard television monitors through the use of set top boxes. Over time, much like cable-ready televisions, it is expected that Internet-ready televisions will proliferate. Unfortunately, even on large screen televisions the web surfing experience is poor, inasmuch as the web content is illegible and/or unnegotiable, unless you happen to be sitting very close to the television. Generally, this makes web surfing impractical in more traditional television environments. As the television web access systems proliferate, improved navigation and content access on the television is likely to become a necessity.

BRIEF SUMMARY OF THE INVENTION

A method and apparatus of simplified navigation is disclosed. A web page is provided having a link to a sister site. The sister site facilitates simplified navigation. Pages from the sister site are served responsive to actuation of the sister site link. In one embodiment, the sister site includes matrix pages to permit matrix navigation.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a block diagram of a system employing one embodiment of the invention.

FIG. **2***a* is an exemplary web page having a sister site link.

FIG. **2***b* is an exemplary first matrix page of a sister site for the web page of FIG. **2***a*.

FIG. **2***c* is a web page having irregular segmentation.

FIG. **3** is a flow diagram of conversion of standard HTML pages to a sister site format in one embodiment of the invention.

FIG. **4** is a block diagram of a client hardware architecture of one embodiment of the invention.

FIG. **5***a* is a flow diagram of server side segmentation in one embodiment of the invention.

FIG. **5***b* is a flow diagram of client side manipulation of a segmented page in one embodiment of the invention.

FIG. **5***c* is a diagram showing a system implementing the tab, scroll, and zoom features of one embodiment of the invention.

FIG. **6** is a flow chart of operations of the navigation system of one embodiment of the invention in a custom terminal custom browser node.

FIG. **7** is a flow diagram of operation of the sister site server of one embodiment of the invention.

FIG. **8** is a diagram of the display of a graphical user interface of one embodiment of the invention.

FIGS. **9***a–d* are examples of sister site matrix pages.

FIGS. **10***a–g* are a series of matrix layers displayed during an exemplary navigation using one embodiment of the invention.

FIG. **11** shows a history window overlying a navigation matrix layer.

FIGS. **12***a* and *b* are an example of a matrix layer of one embodiment of the invention.

FIG. **13** is an e-mail composition matrix layer for one embodiment of the invention.

FIG. **14** shows an alternative matrix page of one embodiment of the invention.

DETAILED DESCRIPTION

A simplified system for navigation of the Internet or other content source allows access to the content and services available thereon with greater ease, on, for example, a display more remote from a user than in the use of the "traditional" personal computer (PC) two foot paradigm.

FIG. **1** is a block diagram of a system employing one embodiment of the invention. A wide-area network (WAN) **10**, such as the Internet, couples together a plurality of communication nodes. Some nodes, such as node **12**, may be a standard prior art PC executing any conventional web browser. Alternatively, node **12** might be a set top box and television, or an internet appliance, or a wireless device, such as a web-enabled cell phone. Additionally, there are server nodes connected to WAN **10**, such as server node **16**, which may be any conventional web server. Also coupled to WAN **10** are browser nodes **22** running a custom browser that facilitate access to information and services provided to the custom browser node **22**. The custom browser node **22** as well as any browser nodes **12** are collectively referred to as client nodes. Content partners, such as content partner node **14** provide content in a specified format that facilitates its use by the client nodes **12**, **22**. In one embodiment, when a user accesses a content partner home page, they have the option of linking to a sister site. As used herein, "sister site" is deemed to mean a site that provides for navigation of the site using a simplified navigation system, such as matrix navigation described in more detail below. In one embodiment, the sister site is traditional HTML pages converted to a matrix format to permit matrix navigation. This conversion may be done using an XML transcoding or any other suitable language.

Content partners may maintain a database of sister site web pages corresponding to the pages in the general use site. Alternatively, content partners may provide a facility for converting web pages on the fly to the sister site format. Content partners may also provide for segmentation of the base HTML web pages and/or the matrix pages. A segmentation may be performed in a number of ways. The page may be divided up based on content or area. The net result, in any case, is that the web page is divided into regions which are not necessarily, but may be, of equal size. The individual regions may be brought into focus independently. By "brought into focus," the concept of focus in this context is analogous to the front window in a windowing system. The focus region is deemed active and subject to client manipulation. In the context of a matrix page, one suitable segmentation is by cell, e.g., each cell corresponds to a region that may be independently brought into focus. The borders of the

regions may or may not be visible on the web pages displayed. This segmentation facilitates tab, scroll, and zoom features described in more detail below. Alternatively, segmentation may be performed as part of a custom browser on custom browser nodes or may be instantiated as a hardware or firmware solution within, for example, the set top box.

FIG. **2***a* is an exemplary web page having a sister site link. By actuating the link, the client begins receiving matrix pages as described in more detail below. FIG. **2***b* shows an example first matrix page reached by activating the sister site link in FIG. **2***a*. FIG. **2***c* is a web page having irregular segmentation. Through segmentation, the page is divided into regions. Individual regions may then be brought into focus permitting simplified navigation, viewing, and manipulation of the data within that region.

FIG. **3** is a flow diagram of conversion of standard HTML pages to a sister site format in one embodiment of the invention. A hypertext markup language (HTML) page **40** is transcoded by a transcoder **30** to yield, for example, an XML page **42** to which a document type definition (DTD) **38** is applied. The DTD **38** specifies the rules for the structure of the resulting XML document. The XML page is then reformatted using extensible style language (XSL) **34** to corresponding format data **32**. XSL is not currently supported by all standard browsers. Thus, after formatting, the XML document is translated to an extensible hypertext markup language (XHTML) document for subsequent display by a client side browser on display **52**. Alternatively, the XML page may have a cascading style sheet (CSS) applied to achieve the desired format. One advantage of the CSS is that it is supported by standard browsers. After application of the CSS, the resulting formatted page can be displayed by the client browser on display **52**.

The above-described conversion may be done by a content partner in advance of request for pages or may be done on the fly responsive to requests for pages. The determination of which to do involves a trade off between latency in providing requested pages and storage space required to store the additional pages. Some on the fly conversion is desirable in the event that a user attempts to access a web site that has not previously been converted. It is also within the scope and contemplation of providing for conversion on the client side.

FIG. **4** is a block diagram of a client hardware architecture of one embodiment of the invention. A processor **100** is coupled to various memory units and an I/O bus bridge **110** by a local bus **102**. Among the expected memory units are random access memory (RAM) **106**, which may be any standard RAM, including standard dynamic random access memory (DRAM), and may be symmetric or asymmetric. Also coupled to bus **102** is a read-only memory (ROM) unit **108**. The ROM will typically include the boot code for the processor **100**. A non-volatile RAM (NVRAM) unit **104** is also coupled to the bus.

The I/O bus bridge **110** is coupled to the local bus **102** and bridges to the I/O bus **112**. A number of units may reside on the I/O bus, including a graphics module **114** that couples to a display (not shown), a universal serial bus (USB) controller that may couple the system to any number of additional USB devices. Common USB devices include keyboards, mice, cameras, scanners, printers, and other peripheral components and input/output devices. Also coupled to the I/O bus may be power management module **118**, which may be coupled to the power switch and may include conventional power conservation protocols, ensuring the processor **100** is permitted to orderly conclude its current operation before changing power states.

An infrared data association (IrDA) interface **120** permits the terminal to be coupled to hand-held devices, if desired. In some embodiments, a keyboard may be coupled by an Ir link. Storage unit **122**, which may, for example, be a flash memory unit, is used for long-term storage of data or files. A transceiver **124** is used to permit the processor to communicate with the hub, whether it be a point-to-point link or across a wide-area network. The transceiver **124** may be, but is not limited to, an ethernet transceiver, a modem, digital subscriber line (DSL) or cable modem. It is expected that the processor **100** will communicate through the transceiver **124** to the server using transmission control protocol/internet protocol (TCP/IP). Encryption and compression within the terminal may be handled by conventional hardware or software solutions.

Audio I/O interface **126** may include an internal microphone and speaker which permits audio input and output. This is particularly useful in the context of voice e-mail or voice over IP communications. Additionally, some embodiments of the invention will include speech to text (STT) capability **130** and speech recognition (SR) capability **136**. Various embodiments may implement these capabilities as hardware or software or a combination of both. In embodiments having SR capability, for simplicity of use, it is desirable to use one of the multiple user SR packages available today and expected to improve in the future, as these packages avoid the necessity of "training" the system. This permits recognition of content of speech and conversion to text.

For purposes of reduced cost, it may be desirable to use a particularly simple speech recognition package, recognizing only, for example, numbers and letters. A suitable speech recognition package will permit a user to navigate the WAN as subsequently described using voice commands and composed e-mails in a hands-free manner. Such an embodiment has the additional advantage that it enables Internet access to the physically challenged. In some embodiments, SR **136** is present, but STT **130** is not. This may permit the processor to respond to voice commands but would not permit composition of e-mail, for example.

In one embodiment of the invention, the terminal has a notebook form factor with an integrated LCD display. In an alternative embodiment, the form factor is a set-top box, which relies on an external display, such as a television or external monitor. In either case, a standard QWERTY keyboard could be used. In the set top box embodiment, a wireless keyboard or remote is desirable.

FIG. **5***a* is a flow diagram of server side segmentation in one embodiment of the invention. A request for a page is received at functional block **400**. A determination is made at decision block **402** whether the requested page has been segmented. If the page has not been segmented, a determination is made at decision block **404** whether the requested page is a matrix page. If the requested page is a matrix page, at functional block **406**, the cells of the matrix are each defined to be a region, thereby completing the segmentation. If the page is not a matrix page, the page is segmented either based on area or content. By "segmentation," it is meant that the page is divided into a plurality of regions. The regions may contain one or more links and/or some amount of content. This segmentation facilitates usability as discussed in more detail below. Once segmentation is complete, at functional block **408**, a determination is made if the boundaries of the regions should be shown on the displayed page

at decision block **410**. If the boundaries are to be shown, the boundaries are overlayed on the page at functional block **412** after the overlay, or if no boundaries are to be shown, the page is sent to the client node at functional block **414**.

FIG. **5***b* is a flow diagram of client side manipulation of a segmented page in one embodiment of the invention. At functional block **450**, a segmented page is received at a client node. A determination is made at decision block **452** if a tab input has been received. As used herein, a tab input is any input which brings about the functionality of moving the focus from one region to another adjacent region. If no tab input has been received, a determination is made at decision block **454** if the regions have identifying symbols associated therewith. Particularly in the case of matrix pages, the different cells typically have associated therewith either an alphanumeric character or some symbol such as an asterisk or other punctuation mark to identify the cell. If there are identifications associated with the regions, a determination is made at decision block **456** if such an identification has been received as an input on the client node. If the identification has been received, the corresponding region is brought into focus. The focus region is active, and in some embodiments, the corresponding region is zoomed to increase its size relative to the inactive regions at functional block **460**. If no identifications are associated with the region or no identification is received, the client waits for a tab input at decision block **452**.

If a tab input is received, the next region is brought into focus. If no region is currently in focus, a first region, e.g., the uppermost leftmost region, will be brought into focus at functional block **458**. At functional block **462**, the regions are scaled so that the in focus region is enlarged relative to the regions which are not in focus. This is particularly desirable for web browsing in a television context where distance from the set may make reading the unscaled page difficult or impossible. Thus, by scaling region by region, readability within the region can be enhanced to permit use and browsing from a distance.

At functional block **464**, a first link in the focus region is highlighted. As used herein, "highlighted" means made active such that a subsequent input, such as a predefined key press activates the link. Highlighting in the link context is analogous to focus in the region context. Highlighting may, but need not include, changing the link's appearance in any manner on the display such as, for example, changing size, color, shading, etc. A determination is made at decision block **466** if an enter signal has been received. However, if no enter signal has been received, a determination is made at decision block **468** if a scroll signal has been input at the client node. If a scroll signal has been input, a next link is highlighted at functional block **472**. If an enter signal is received at functional block **466**, a then highlighted link is activated at functional block **474** and a next segmented page is received, and the process begins again. Alternatively, if no scroll signal input is received at decision block **468**, a determination is made at decision block **470** whether a tab or identification input has occurred. If it has, the system continues processing at blocks **458** or **460**, respectively.

FIG. **5***c* is a diagram showing a system implementing the tab, scroll, and zoom features of one embodiment of the invention. A set top box **500** is coupled to a television monitor **502** and is responsive to remote control **504**. Remote control **504** may be a custom remote control, a wireless keyboard, or even a standard universal remote control. Remote control **504** may be equipped with a microphone for accepting voice commands or may merely provide push button inputs. In frame one, television **502** is displaying a web page **510** that has been segmented into eight equally dimensioned regions A–H. Remote control **504** includes a tab function **520**, a scroll function **522**, and an enter function **524**. Responsive to actuation of the tab function, region A is brought into focus, as shown in the second frame. Link one is highlighted and A is enlarged, while the remaining regions are scaled so that A is much larger relative to the other regions, thereby accomplishing a zoom function and improving readability of the information contained in region A. This is shown as web page **512**. If, when A is in focus, the user actuates scroll function **522**, a second link in region A is highlighted as shown on page **514**. In one embodiment, scrolling within the focus region does not effect the size or representation of the non-focus regions. In the event that, at web page **512** or web page **514**, the enter function **524** is actuated, $link_1$ or $link_2$ would be traversed, respectively. If the segments are actually associated with their alphanumeric designator, and that remote control **504** has alphanumeric keys, for example, letter key F **526**, web page **516** shows a web page that would be reached from web page **510**, **512**, or **514** responsive to actuation of the F key. In web page **516**, the F region is in focus, and the remaining regions are scaled to be much smaller than the F region.

These are merely illustrative examples of the tab, scroll, and zoom features of one embodiment of the invention. While the shown embodiment tiles the regions, it is within the scope and contemplation of the invention to overlay the focus region on one or more of the other regions. It is also within the scope of the invention to permit a user to increase the zoom of the focus region to exceed the physical space. In such case, scrolling within the region may be required to view the entire contents of the region. Such scrolling need not effect the display of the non-focused regions.

FIG. **6** is a flow chart of operations of the navigation system of one embodiment of the invention in a custom terminal custom browser node. Upon power-up at functional block **602**, a content partners home page is accessed. In some embodiments, it may be possible to bypass access of the home page and go directly to the sister site home page. At functional block **604**, a node establishes communication with a sister site server (SSS). At functional block **605**, a first matrix layer is received from the SSS. At decision block **606**, the node waits for a keypress. If at decision block **606**, a determination is made that a key has been pressed, a determination is made at decision block **607** whether the keypress corresponds to a composition cell. A composition cell is deemed to be a cell in the navigation matrix which permits a user to enter additional data. For example, a search cell or e.g., a purchase order form or an e-mail may have one or more composition cells. If the cell is a composition cell, the system enters composition mode at functional block **632**. In composition mode, the digits of the keypad represent the digits themselves, rather than navigation options. The cursor will also appear in the composition field of the composition cell. At decision block **634**, a determination is made if the enter key has been pressed. The enter key is defined in one embodiment of the invention to signify the end of a composition. Thus, if the enter key has not been pressed, the system remains in composition mode. However, if at decision block **634**, the enter key has been pressed, the system returns to navigation mode at functional block **636**. It is also within the scope and contemplation to define other keys to instigate return to the navigation mode.

If a keypress is received and not found to correspond to a composition cell at decision block **607**, a determination is made at decision block **608** whether the matrix layer corresponding to the keypress exists within the cache. In this

connection, it is determined whether a representation of that matrix layer, even if in the cache, is stale and therefore needs to be freshly downloaded. If the data is stale or not present in the cache at all, the keypress event is sent to the SSS. In one embodiment, the entire navigation path, including the keypress event, is sent with each keypress. When the navigation path is sent with each keypress event, the SSS is able to identify the requested matrix layer rapidly on the fly.

Subsequently, at functional block **612**, the client node receives the updated matrix layer corresponding to the keypress event. That matrix layer is loaded to the memory at functional block **614** and the cache is time-stamped at functional block **616**. At functional block **618**, new ads may be received from the SSS. Notably, the receipt of the ads is asynchronous with the matrix layer receipt and may occur at any time without being prompted by a keypress event. At functional block **620**, the incoming matrix layer is rendered to a temporary buffer by using a double-buffering technique. The actual rendering is transparent to the user. At functional block **622**, the status bar for the load is updated to indicate the percent complete of the matrix layer rendering. At functional block **624**, a determination is made if the rendering is complete. If it is not, the buffer continues to render and the status bar continues to update. By regularly updating the status bar, the user is not left wondering if the device is working. This is expected to limit the frustration experienced by many new users during the wait while matrix layers are rendered. If the rendering is complete, the temporary buffer is swapped with the frame buffer and the new matrix layer is displayed at functional block **626**. Then at functional block **628**, the history of the navigation path is updated to reflect the new matrix layer. The system then returns to await a next keypress to indicate further navigation. By iteratively pressing appropriate keys, a user may navigate to any desired depth up to a maximum depth along any navigation path and obtain content relevant to the path navigated. If instead, the matrix layer was validly in the cache at decision block **608**, the matrix layer is rendered from the cache at functional block **630** and the system awaits the next keypress.

"Maximum depth" as used herein applies on a cell by cell basis for primary navigation options. A maximum depth is reached for a cell in a navigation path when pressing a corresponding key will not take a user to a deeper matrix layer in the matrix. While content, as distinguished from the matrix layer and their cell headings, will be displayed once a maximum depth is reached, it is within the scope and contemplation of the invention to display some content in cells of an intermediate matrix layer, i.e. one that is not at the maximum depth.

"Primary navigation options" as used herein are those navigation options that necessarily change between successive matrix layers, changing from general to more specific with increases in depth in the matrix.

FIG. **7** is a flow diagram of operation of the sister site server of one embodiment of the invention. A determination is made if the keypress event has been received at decision block **702**. If the keypress event has been received, a determination is made if the matrix has reached maximum depth at decision block **704**. If the matrix has not reached the maximum depth, a matrix layer corresponding to the keypress is sent at functional block **706**. Such matrix layers may or may not include content in cells with navigation choices. If the matrix has reached maximum depth for that navigation path, a content layer corresponding to the keypress event is sent to the client node at functional block **708**. A content layer may or may not include matrix cells in addition to the content. New ads are sent to the client node at functional block **710**. The system then awaits the next keypress event from a client node.

FIG. **8** is a diagram of the display of a graphical user interface of one embodiment of the invention. The screen is divided into a plurality of cells. In this embodiment, there are fifteen cells that represent navigation options and one messaging cell for displaying messages from the server, the progress or status bar, and a title block. The cells can further be subdivided between the digit keys 1–9 keys which, in this embodiment, represent the primary set of navigation options and the keys designated by letters A–C which represent secondary navigation options and *, 0, and # keys that may be additional navigation options or provide specialized functions. For example, the * key may return the user to the server home site, thereby leaving matrix navigation. The ABC cells will typically hold advertising, and selecting one of those cells will generate a matrix layer with primary navigation cells directed to that advertiser or the product line being advertised. While the interface is designed to be fully accessible with minimal key strokes from a key pad, it is also within the scope and contemplation of the invention to permit selection with a mouse or other pointer device.

FIGS. **9***a–d* are example sister site matrix pages. In FIG. **9***a*, an advertising cell **900** is the focus region of the displayed image. Ten advertisements are displayed within the regions. The first advertisement **902** is highlighted. From this matrix page, the * returns a user to the amazon.com home page. The # reveals the contents of a user's shopping cart. In FIG. **9***b*, the contents of the focus window have been enlarged (zoomed) such that only four advertisements are displayed in ad cell **900**. The no links/advertisements are highlighted. In FIG. **9***c*, advertisement **902** is again highlighted. This may occur, for example, by a user pressing a scroll key from FIG. **9***b*. In FIG. **9***d*, a user has pressed a scroll key several times from FIG. **9***c*. Thus, advertisement **902** has scrolled out of view and advertisement **904** is highlighted. While in this example, ten advertisements were present, the number of links within such a cell may be arbitrarily large. In the shown embodiment, scrolling through the links in the focus cell and scaling the focus cell content does not effect the user's view of the remaining cells.

FIGS. **10***a–g* are a series of matrix layers displayed during an exemplary navigation using one embodiment of the invention. In this example, navigation begins at the Shopping and Products matrix layer and shown in FIG. **10***a*. A selection of 5 on the **10***a* matrix layer yields an Electronics matrix layer shown in FIG. **10***b*.

Selecting 1 on the keypad when the matrix layer of **10***b* is displayed yields the Audio matrix layer of FIG. **10***c*. By selecting an 8 on the keypad when **10***c* is displayed, the system displays a Receivers matrix layer of FIG. **10***d*, which breaks down receivers into price categories and also provides the option of navigating, in this embodiment, into Consumer Reports industry reports related to receivers. Notably, in FIG. **10***d*, the number of primary navigation options is reduced to 4. Thus, it is not necessary that all layers of the matrix have the same number of cells, nor is it required that all cells have the same size. A user can select Stereo Only by pressing 1 on the keypad, which yields a stereo only matrix layer shown in FIG. **10***e*.

In one embodiment of the invention, the products are ordered based on some ranking system, such as Consumer Reports. Thus, for example, in FIG. **10***e*, Technics received the highest ranking of receivers in the selected category from Consumer Reports. It is expected that for any particular

product class, potential purchasers are likely to only be interested in the top several products within that class, not for example, the 15th best receiver in the $150–$290 range. However, it is within the scope and contemplation of the invention to permit a "more" option which allows a user to get a set of the next most highly ranked products and possibly unranked products as well. It is expected that supplying product options in a user-friendly ranked order will encourage users to be more willing to conduct e-commerce.

By selecting a 1 on the keypad when matrix layer **10***e* is displayed, a user reaches the matrix layer of FIG. **10***f*, as well as reaching the maximum depth for that navigation path. Thus, pressing 1 on the keypad in response to matrix layer **10***f* does not move the user deeper into the multi-dimensional matrix, and content is displayed in cell **1** indicating the model, price, picture, and possibly other information about the Technics product. Cell **1** is also larger than the other cells.

Other navigation options are provided in additional matrix cells surrounding cell **1** and its content. The additional cells represent navigation paths that have not reached their maximum depth. For example, by pressing a 3, one would get to a features of the Technics product content layer. Such screen would display features of the Technics system. The various navigation paths typically have a maximum depth at which content is displayed. However, reaching the maximum depth of a particular navigation path does not indicate that another navigation path may not have yet a deeper matrix layer. For example, while the maximum depth of the navigation path corresponded to cell **1** has been reach in FIG. **10***f*, selecting a 9 on the keypad will move a user to a Technics purchase matrix layer, shown in FIG. **10***g*. By selecting digits on the keypad, a user can move between fields to fill out a purchase form which, as discussed above, is one example of a matrix layer including composition cells. In some embodiments, the form can be filled in using keyboard input. In other embodiments, the speech to text capabilities of the terminal will permit the user to fill out the electronic purchase form orally.

FIG. **11** shows a history window overlying a navigation matrix. The history window would appear if the history button on the keypad were actuated. By using the up/down arrow key on the keypad, the user may then select a prior matrix to jump to directly without moving backwards or forwards iteratively.

FIGS. **12***a* and *b* are an example matrix after a selection of 0 from the main menu screen, which allows one to conduct a search through cell **1**. On this figure, advertisements for Jaguar appear in the ABC cells. In one embodiment of the invention, the ABC designation appears initially (as shown in FIG. **12***a*) when the screen is first refreshed and then fades away to reveal solely the advertisement in each of those cells (as shown in FIG. **12***b*). In this example, pressing an A on the keypad would take the user to a matrix reflecting company information about Jaguar. Pressing B would take the user to a matrix for the virtual showroom, and C would take the user to a purchase screen for the advertised item.

In some cases, the advertising cells are merged as a single cell showing a single advertisement and permitting navigation to only a single matrix layer therefrom. In one embodiment, the background can be an advertisement. This is also shown in FIGS. **12***a* and *b*. Significantly, the advertisement can be targeted by modifying the ad responsive to the apparent navigation path of the user. This leaves the potential of showing the user an advertisement for a product or service more likely to be of interest. For example, when a user selects Electronics in the example of FIGS. **10***a–g*, the next screen may have as background an advertisement, e.g. for Circuit City.

FIG. **13** shows the e-mail creation screen for one embodiment of the invention. This would be reached by pressing 3 on the keypad when the matrix layer of FIG. **9***d* is displayed. Again, all e-mail functions other than actually entering the text and the address can be performed using the simple interface with numerical digits and the letters ABC corresponding to inbox, the outbox, and the sent features of standard e-mail, respectively.

FIG. **14** shows an alternative matrix page of one embodiment of the invention. In this embodiment, the matrix occupies only a portion of the screen real estate. The remaining real estate may be occupied by content, a zoom of the focus cell, or advertising.

In the foregoing specification, the invention has been described with reference to specific embodiments thereof. It will, however, be evident that various modifications and changes can be made thereto without departing from the broader spirit and scope of the invention as set forth in the appended claims. The specification and drawings are, accordingly, to be regarded in an illustrative rather than a restrictive sense. Therefore, the scope of the invention should be limited only by the appended claims.

What is claimed is:

1. A method comprising:

providing a webpage associated with a sister site; and

providing a simplified navigation interface for the webpage by the sister site.

2. The method of claim **1** wherein the simplified navigation interface employs a multi-layered matrix navigation, the method further comprising:

accepting an alpha numeric indication of a navigation option, the navigation option displayed by the navigation interface; and

serving a matrix layer corresponding to the navigation option.

3. The method of claim **1** further comprising:

transcoding a hyper text markup language (HTML) page into an extensible markup language (XML) page; and

applying a document type definition (DTD) to the XML page.

4. The method of claim **3** further comprising:

formatting the XML page using extensible style language (XSL); and

transforming the formatted page into one of extensible hyper text markup language (XHTML) and HTML.

5. The method of claim **3** further comprising:

applying a cascading style sheet (CSS) to the XML page.

6. A computer readable storage media containing executable computer program instructions which when executed cause a digital processing system to perform a method comprising:

providing a webpage associated with a sister site; and

providing a simplified navigation interface for the webpage by the sister site.

7. The computer readable storage media of claim **6** which when executed cause a digital processing system to perform a method further comprising:

accepting an alpha numeric indication of a navigation option, the navigation option displayed by the navigation interface; and

serving a matrix layer of a multi-layered matrix corresponding to the navigation option.

8. The computer readable storage media of claim 6 which when executed cause a digital processing system to perform a method further comprising:

transcoding a hyper text markup language (HTML) page into an extensible markup language (XML) page; and

applying a document type definition (DTD) to the XML page.

9. The computer readable storage media of claim 8 which when executed cause a digital processing system to perform a method further comprising:

formatting the XML page using extensible style language (XSL); and

transforming the formatted page into one of extensible hyper text markup language (XHTML) and HTML.

10. The computer readable storage media of claim 8 which when executed cause a digital processing system to perform a method further comprising:

applying a cascading style sheet (CSS) to the XML page.

11. The method of claim 1, further comprising:

displaying the navigation interface on a television set, the television set having a remote control.

12. The method of claim 1, further comprising:

displaying the simplified navigation interface on a portable wireless device.

13. The method of claim 1, wherein a sister site is a server on a network.

14. The computer readable storage media of claim 6, further comprising:

displaying the navigation interface on a television set, the television set having a remote control.

15. The computer readable storage media of claim 6, further comprising:

displaying the simplified navigation interface on a portable wireless device.

16. The computer readable storage media of claim 6, wherein a sister site is a server on a network.

17. The method of claim 1, wherein the webpage contains commercial content.

18. The computer readable storage media of claim 6, wherein the webpage contains commercial content.

19. The method of claim 1, further comprising:

displaying the navigation interface via a computer system.

20. The computer readable medium of claim 6, further comprising:

displaying the navigation interface via a computer system.

21. The method of claim 1, further comprising:

providing a second webpage associated with the sister site; and

providing the simplified navigation interface for the second webpage by the sister site.

22. The computer readable medium of claim 6, further comprising:

providing a second webpage associated with the sister site; and

providing the simplified navigation interface for the second webpage by the sister site.

23. The method of claim 1, wherein the simplified navigation option includes the use of primary navigation options.

24. The computer readable medium of claim 6, wherein the simplified navigation option includes the use of primary navigation options.

25. The method of claim 1, wherein the webpage is publicly accessible.

26. The computer readable medium of claim 6, wherein the webpage is publicly accessible.

27. The method of claim 2, further comprising:

displaying purchasing information related to at least one item via the matrix layer.

28. The computer readable medium of claim 6, further comprising:

displaying purchasing information related to at least one item via the matrix layer.

29. The method of claim 1, wherein the simplified navigation interface includes a search form.

30. The computer readable medium of claim 6, wherein the simplified navigation interface includes a search form.

31. The method of claim 1, wherein the simplified navigation interface includes an email form.

32. The computer readable medium of claim 6, wherein the simplified navigation interface includes an email form.

33. The method of claim 2, further comprising:

displaying a purchasing interface in response to receiving a navigation option input.

34. The method of claim 2, further comprising:

displaying a purchasing interface in response to receiving a navigation option input.

35. The method of claim 21, wherein the simplified navigation interface includes a multi-layered matrix, and wherein each matrix layer includes multiple cells.

36. The method of claim 22, wherein the simplified navigation interface includes a multi-layered matrix, and wherein each matrix layer includes multiple cells.

* * * * *